

# The Buyer's Guide

Suppliers Specializing in Service to the Refrigeration and Air Conditioning Industries

## DAYTON Gives You

You control your own re-sale prices, selling methods and profits with Dayton. Write for Money-making facts on line and policies.

- Long Discounts
- Interchangeable Snap-On Colors
- Quiet Performance
- DeLuxe Cabinets

**HEINZ & MUNSCHAUER**  
22 Superior St. Established 1865 Buffalo, N.Y.

## STEELCRAFT REFRIGERATOR CABINETS

WE MANUFACTURE DISTINCTIVE FOUR AND SIX CU. FT. MODELS

WRITE, WIRE, OR PHONE FOR PRICES

**STEELCRAFT INDUSTRIES, INC.**  
4851 SPRING GROVE AVE.  
CINCINNATI, OHIO



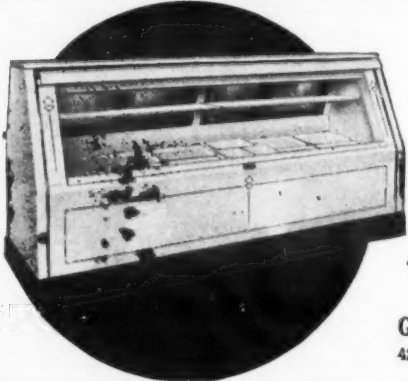
### 3600 Line of Display Cases—

These cases afford more square feet of display space than many other cases considerably larger. Two sizes are available—14 and 19 1/2 square feet of display—and you have your choice of Porcelain or DuLux finish.

Among the features are extra large rubber composition sliding doors; extra height doors for storage department; full view of illuminated display section; removable intermediate shelf, and 3" approved insulation.

For real convenience, economy, room and accessibility these cases cannot be equaled. Sold only through Dealers and Jobbers.

**GLOEKLER MANUFACTURING COMPANY**  
429 Fourth Avenue, Pittsburgh, Pa.



## PURO ELECTRIC WATER COOLERS

Thoroughly reinforced all steel attractively finished cabinets.

Complete line of different Models and Capacities.

Write for details and sales prices.

Puro Filter Corporation of America

440 Lafayette Street, New York City Spring 7-1800

### STANDARD REFRIGERATING APPLIANCES



## AUTOMATIC SUCTION PRESSURE THROTTLING VALVE

Write for bulletin on complete line covering refrigerating appliances, liquid line filters, dehydrators, acid neutralizers, standard parts and materials, service tools, shaft seals, bearing metals and parts. Descriptive literature will be gladly furnished on any or all of these lines on request.

**AMERICAN INJECTOR COMPANY** 1481-14th. Street, Detroit, Mich.

## GILMER

## V-Belts

**QUIET EFFICIENT LONG-LIVED**

For electric refrigerators, washers, beer pumps, oil burners, compressors, air-conditioning units, etc. . . Gilmer has a V-Belt to fit . . . from the largest stock of moulds in the world. Write for V-Belt catalog.



**L. H. GILMER COMPANY, TACONY, PHILADELPHIA**

## KASON HARDWARE

Manufacturers of Fine Refrigerator Hardware

**KASON HARDWARE CORP., 127-137 Wallabout St., Brooklyn, N.Y.**



## 14 Companies Sell 173,196 Household Electric Refrigerators in February

The following 14 member companies of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) reported household refrigerator sales for February, 1936: Apex Electrical Mfg. Co., Crosley Radio Corp., Frigidaire Corp., General Electric Co., Gibson Electric Refrigerator Co., Kelvinator Corp., Leonard Refrigerator Co., Norge Corp., Servel, Inc. (export only), Stewart-Warner Corp., Sunbeam Electric Mfg. Co., Uniflow

Mfg. Co., Universal Cooler Corp., and Westinghouse Electric & Mfg. Co. Member companies not reporting included: Jomoco, Inc., Merchant & Evans Co., and Sparks-Withington Co.

The sales of the reporting companies do, however, include units manufactured for the following concerns: Major Appliance Corp., Montgomery Ward & Co., Potter Refrigerator Corp., and Sears, Roebuck & Co.

		SALES FOR FEBRUARY, 1936		1936		Other Foreign	
		Quantity	Value	Quantity	Value	Quantity	Value
<b>Lacquer (Exterior) Cabinets Complete</b>							
1. Chest	185	\$ 8,140					\$ 12,508
2. Less than 3 cu. ft.	10	580				4	234
3. 3 to 3.99 cu. ft.	3,587	206,135		86	5,039	1,717	97,217
4. 4 to 4.99 cu. ft.	18,482	1,215,285		242	15,977	3,702	243,407
5. 5 to 5.99 cu. ft.	44,695	3,437,238		231	17,585	930	74,936
6. 6 to 6.99 cu. ft.	45,970	3,996,528		135	11,908	856	76,492
7. 7 to 7.99 cu. ft.	13,984	1,449,246		80	8,501	343	36,641
8. 8 to 8.99 cu. ft.	4,316	424,507		1		22	2,874
9. 10 to 12.99 cu. ft.							
10. 13 cu. ft. and up	2	321					
11. Total Lacquer	131,211	10,737,980		871	63,834	7,823	544,309
<b>Porcelain (Exterior) Cabinets Complete</b>							
12. Up to 4.99 cu. ft.	1,001	73,924		15	1,410	49	3,688
13. 5 to 5.99 cu. ft.	5,541	468,149		8	673	136	11,716
14. 6 to 6.99 cu. ft.	8,041	751,833		12	1,138	319	30,924
15. 7 to 7.99 cu. ft.	6,098	704,766		8	883	132	15,273
16. 8 to 8.99 cu. ft.	2,220	305,589		7	895	120	17,221
17. 10 to 12.99 cu. ft.	245	43,718				58	9,718
18. 13 cu. ft. and up	171	39,850				46	10,406
19. Total Porcelain	23,317	2,387,829		50	4,999	860	98,946
20. Total—Lines 11 and 19	154,528	13,125,809		921	68,833	8,683	643,255
21. Separate Systems							
1/4 Hp. or Less	8,278	240,918				635	34,226
22. Separate Household Evaporators	135	2,446		2	28	14	326
23. Total—Lines 20, 21, 22	162,941			923		9,332	
24. Condensing Units							
1/4 Hp. or Less	251	15,886		44	2,600	413	25,377
25. Cabinets—No Systems	545	17,950		1	115	50	1,339
26. Total Household		\$13,403,009			\$71,576		\$704,523

### Sunday Supplements Used in Promoting Philadelphia Refrigeration Show

PHILADELPHIA—In a highly concentrated newspaper drive, the Electrical Association of Philadelphia built up the eighth annual electric refrigeration show which opened here last week with Sunday supplements in two Philadelphia papers—*Philadelphia Record* carrying 18 pages, and *The Philadelphia Inquirer* 10 pages, on electric refrigeration.

Other refrigeration supplements appeared last week in *The Evening Bulletin*, *Evening Public Ledger*, and *Daily News*. Thirty-two foreign-language papers also carried front page stories and several pages of publicity and advertising on refrigeration, reports George R. Conover, managing director of the association.

On the opening day of the show, 90 boxes were sold toward the 50,000 unit-goal which the association has set for 1936, Mr. Conover states.

Similar shows are being conducted in Chester and Pottstown, both in the greater Philadelphia territory.

### Boulder Dealers Cooperate in Refrigeration Show

BOULDER, Colo.—To initiate their 1936 spring refrigeration drive, the eight dealers in this town of 12,000 inhabitants recently sponsored a three-day refrigeration show in the lobby of the leading theater.

Publicizing the event, dealers co-operated in securing a full-page advertisement in the city's daily newspaper. Individual insertions showed the line of refrigerators handled by each dealership.

The theater in which the show was held was recently remodeled, and its lobby provided an attractive setting for dealers' displays. The show was held on the three days of the week on which the theater regularly has the largest attendance.

### Mogg to Handle Kelvinator Sales in Oklahoma

BARTLESVILLE, Okla. — J. L. Mogg, formerly a Kelvinator dealer here, was recently placed in charge of sales in the western half of Oklahoma for Richards & Conover Hardware Co., Kelvinator distributor in the Kansas City territory.

### Bruno-N.Y. February Sales Equal 1-4 of 1935 Total

NEW YORK CITY—Sales of Fairbanks-Morse refrigerators by Bruno-New York, Inc., distributor, during February of this year were equal to 25% of the distributorship's entire sales of 1935, reports H. A. Glasser, manager of refrigerator sales.

### Oswald Returns to Crosley Engineering Department

CINCINNATI—Louis C. Oswald, for the past several years with Sparks-Withington Co., has returned to the engineering department of Crosley Radio Corp. to work on refrigerator development.

### N. Y. & Pennsylvania Lead State Sales

States and Territories	Quantity of Household Low Sides
Alabama	1,633
Arizona	882
Arkansas	1,233
California	15,150
Colorado	1,159
Connecticut	3,077
Delaware	222
District of Columbia	1,224
Florida	2,322
Georgia	2,689
Idaho	1,000
Illinois	10,484
Indiana	4,239
Iowa	2,831
Kansas	1,821
Kentucky	2,167
Louisiana	2,024
Maine	916
Maryland	2,016
Massachusetts	7,716
Michigan	7,108
Minnesota	3,140
Mississippi	703
Missouri	4,433
Montana	901
Nebraska	1,415
Nevada	307
New Hampshire	901
New Jersey	7,525
New Mexico	402
New York	18,145
North Carolina	3,516
North Dakota	622
Ohio	8,751
Oklahoma	2,187
Oregon	1,418
Pennsylvania	11,734
Rhode Island	1,247
South Carolina	1,496
South Dakota	756
Tennessee	2,139
Texas	6,600
Utah	1,823
Vermont	524
Virginia	2,567
Washington	2,824
West Virginia	1,955
Wisconsin	2,648
Wyoming	299
Total United States	162,941
Canada	923
Other Foreign (Including U. S. Possessions)	9,332
Total for World	173,196

### Landau Will Represent Colen-Gruhn Co.

NEW YORK CITY—F. E. Landau was recently appointed sales representative for Colen-Gruhn Co., Inc., electrical appliance distributor, reports B. D. Colen, president.

Mr. Landau will handle Leonard refrigerators, Zenith radios, RCA tubes, and Universal washers.

### Bluefield Supply Made Hotpoint Distributor

BLUEFIELD, W. Va.—Bluefield Supply Co. has been appointed distributor in this territory for Hotpoint electric refrigerators; and the Clark Hardware & Furniture Co., which operates seven retail stores in the surrounding territory, has been signed up to handle Hotpoint refrigerators exclusively.

Managers of all these stores attended a meeting recently at which Erle F. Morford, divisional representative of Hotpoint, explained in detail Hotpoint's campaign for the year.

### General Heating Formed to Handle S-W in Hartford

HARTFORD, Conn.—General Heating Co. has been formed here to deal in Stewart-Warner refrigerators as well as electric and gas ranges and oil burners. Eugene Schiavone is president; Gustave Quistberg secretary; and A. B. Colandro, sales manager.

## Classified

RATES: Fifty words or less, one insertion \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

### POSITIONS AVAILABLE

**SALES ENGINEER WANTED.** Prominent manufacturer of automatic control equipment has several openings for sales engineers. Previous University training or experience in air conditioning and heating, and an acquaintanceship with architects and engineers is essential. Box 774, Electric Refrigeration News.

### POSITIONS WANTED

**EXPERIENCED SERVICE MAN** on methyl, sulphur and Freon commercial and domestic jobs. Factory trained by two nationally-known manufacturers. Bohemian, age 23, height 6 feet, weight 150, single, three years' experience. Free to travel. Drive '35 Chevrolet. Sales minded. Write or wire Rudolph Kriz, 7852 W. 45 Pl., Lyons, Ill.

**YOUNG MAN** 26 years old, single, graduate of Coyne Electrical School in electricity, refrigeration and air conditioning, desires position as service man. Willing worker, good character, will locate anywhere. Box 785, Electric Refrigeration News.

### EQUIPMENT WANTED

WE ARE on the market for any quantity of used or close out commercial refrigeration equipment, condensing units, coils, air conditioning apparatus, etc. Advise by mail what you have to sell, make, model, condition, price, etc. Address Box No. 135, Madison Square Sta., New York, N. Y.

### EQUIPMENT FOR SALE

COMPRESSORS for 4 and 5 foot cabinets \$7.00 each. Box 769.

**ATTENTION SERVICE MEN:** A charging valve for G.E. sealed units (Monitor Top, etc.) hand wrench included, for only \$6.25. All orders C.O.D. We pay the postage. Act now! Be ready for that service call. Distributors, Refrigeration Equipment & Supply Co., 5733 W. Chicago Ave., Chicago, Ill.

**ISOBUTANE.** We offer purest and dryest isobutane for the most exacting scientific purposes; in your 80 lb. cylinders at \$7.50, in our 120 lb. cylinders, \$7.00, in small lots at \$1.00 per pound. The Standard Refrigeration Co. of Pittsburgh, 1148 Dohrman St., McKees Rocks, Pa.

### FRANCHISE WANTED

**IMPORTANT FIRM ESTABLISHED** in Spain, dealing exclusively with the distribution of articles on the refrigeration line, wishes to represent in his country American manufacturers and exporters of all kinds of refrigeration parts except condensing units. Exceptionally placed to control the Spanish market with first-class articles. Excellent references. Address: Sumbistros Frigorificos, Castanos 25, Bilbao, Spain.

### BUSINESS OPPORTUNITY

**COMMERCIAL REFRIGERATION,** air conditioning, engineering and installation business for sale. Large inventory of parts and equipment. Located in New York City. Owner retiring from business. Box 784, Electric Refrigeration News.

### HERMETIC UNITS REPAIRED

**GENERAL ELECTRIC SEALED UNITS—**repaired, rebuilt, exchanged. Guaranteed service. Our modern shop is especially equipped to efficiently repair these units. prices low and workmanship the best. Give model number when writing. Immediate service. Rex Refrigeration Service, Inc., 446 East 79th St., Chicago.

**GENERAL ELECTRIC sealed units** repaired, rebuilt. Guaranteed workmanship. The largest shop and best equipped in the United States. Give model number when writing. Immediate service. Satisfied customers in every part of the country. Refrigerator Engineering Parts and Service Co., 2800 So. Parkway, Chicago, Ill.

### MAJESTIC UNITS

**TIRED OF BEING FOOLED—**we really fix your Majestic Units, make them freeze faster and run less than when they were new, \$17.50 to \$37.50, with a two-year written guarantee. Send your units to Ft. Smith and get them fixed right. Peno Service Company, Ft. Smith, Ark.

### REPAIRS

**ALL MAKES household, commercial thermostats** rebuilt, bought, sold. Send me transportation prepaid, five defective or obsolete thermostats. I will repair and return one free of charge for remaining four. Replacement parts bought, sold. Telephone Flushing 9-2206. S. F. Harris, 137-66 Holly Avenue, Flushing, N. Y. Write for price list.

**REFRIGERATION CONTROLS** repaired. Domestic types \$2.00. Over 12—\$1.75. Advance methods used for precision calibration. All work guaranteed for six months. Prompt attention given to all orders. United Gauge and Instrument Co., 436 West 57th St., New York City.

### SCHOOLS

**REFRIGERATION AND AIR CONDITIONING** are two of our best depression-proof industries to men who know their business in these lines. Cut and try methods are passing out. Learn these subjects by combined course in theory and practice. For details write Detroit School of Refrigeration, 6517 Grand River, Detroit, Mich.



## REFRIGERATION NEWS

Registered U. S. Patent Office

ESTABLISHED 1926. MEMBER AUDIT BUREAU OF CIRCULATIONS. MEMBER ASSOCIATED BUSINESS PAPERS.

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matter Aug. 1, 1927

DETROIT, MICHIGAN, APRIL 8, 1936

Copyright, 1936, by  
Business News Pub. Co.THREE DOLLARS PER YEAR  
TEN CENTS PER COPY**FHA Act May Allow Financing Of Commercial****Ruling Must Be Made on Large Refrigerator Equipment**

WASHINGTON, D. C.—Officials of the Federal Housing Administration are apparently awaiting for President Roosevelt to sign the bill (passed by both Houses of Congress) which extends Title 1 of the National Housing Act, before making any administrative interpretations of the new Act. It is pretty well established, however, that electrical appliances are no longer eligible for FHA financing. While loans of \$2,000 or less for the purchase and installation of equipment and machinery on any type of property are specifically excluded, loans in excess of \$2,000 for the purchase and installation of equipment and machinery for business and industrial properties remain eligible under the amended Act.

This apparently leaves the door open for FHA financing of commercial refrigeration and air-conditioning installations. Insured institutions and FHA officials won't comment on this possibility, however, until they get an official interpretation.

That part of the new Act which

**Appliance Sales of Norge Corp. Total 56,585 in March**

DETROIT—Sales of all Norge appliances totaling 56,585 units during March pushed aggregate sales for refrigerators, washers, ranges, and ironers 64% ahead of the same month last year, and made sales for the quarter 81% higher than the corresponding quarter of 1935, reports Howard E. Blood, president of Norge division of Borg-Warner Corp.

Refrigerator sales increased 37% during March, 1936, over the same month last year; ranges 904%, and washers, 159%. This places March refrigerator sales 4% above the previous company record made in May, 1934, declared Mr. Blood.

Detroit and Muskegon factories have been working three shifts, 24 hours a day, since the first of the year, according to Mr. Blood.

Refrigerator production for March totaled 37,700 units.

**Replacement of Market Ammonia Systems Opens Big Los Angeles Field for Belsey**

LOS ANGELES—Gradual replacement of the old ammonia systems in California's "super markets" has opened a wide new commercial refrigeration field for The George Belsey Co., Ltd., General Electric distributor.

A California development, the super market is characterized by its great size, large number of concessionaires, and by a remarkable food display.

California real estate men and fixture salesmen, looking for promotional stunts, were the originators of this particular market type.

The procedure for establishment usually followed a set pattern. The real estate agent or fixture promoter would approach the owner of a location in the heart of a good residential or shopping district where there was a heavy automobile and pedestrian traffic and interest in building a market for sub-lease to various outside operators.

After getting the tentative approval of the lot owner, the promoter would then attempt to line up a few concessionaires including meat, vegetable, grocery, delicatessen, and frequently even bread and coffee firms.

Tentative agreements of the concessionaires were in turn used to interest the owner of the property in building a market and supplying all the fixtures, including refrigeration. The results, Belsey Co. reports, were that the lot owner bought equipment and refrigeration no better than were required to get by with the tenant.

For a number of years, T. H. Cham-

**Frigidaire Biggest Newspaper Space Buyer in 1935**

NEW YORK CITY—With a total of 933,941 lines, appearing in newspapers of 86 cities, Frigidaire Corp. was leading newspaper advertising space user of the mechanical refrigeration industry during 1935, according to data made public by Media Records, Inc., based on an analysis of 369 daily and Sunday newspapers in 95 cities.

Norge Corp. was second among the refrigerator manufacturer space users, through placement of 875,495 advertising lines in dailies of 75 cities. Kelvinator, with 783,024 advertising lines in papers of 63 cities had third place, while fourth went to Westinghouse

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**Installation Practice, Refrigerants Up at New York Hearing**

NEW YORK CITY—Refrigerants, questions on installation practices on air conditioning, and the matter of whether self-contained household electric refrigerators ought to be installed by licensed service men, occupied the spotlight as hearing on New York City's proposed code relating to refrigerating and air-conditioning systems was resumed last Wednesday, April 1, at the Municipal Building.

The hearing was conducted by Deputy Fire Commissioner Francis X. Giaccone, who announced that the job of drafting and administering the code had been given back to the N. Y. Fire department from the Buildings department, to whom it had been given earlier this year.

It was also stated that another revision of the proposed code would be made in the near future, and that probably one more hearing would be held before the code is finally presented to Fire Commissioner John McElligott for final adoption.

As the hearing opened, C. K. Michaels, engineer for the Fire department who drafted the code, introduced a report on the use of an absorbent brine, where sulphur is the refrigerant, in air-conditioning systems. The tests were made by Electrical Testing Laboratories of New York City for the Virginia Smelting Co., which manufactures sulphur dioxide.

Commissioner Giaccone read a part of the report, and suggested that it be placed in the records. He then

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**Only 2 Weeks Left to Place Advance Orders For Specifications**

Only two weeks remain for readers to place advance orders for extra copies of the April 22 issue, which will contain specifications of all makes of all 1936 household electric refrigerators. Advance orders will assure readers of speedy delivery of the extra copies.

Specifications of commercial condensing units and self-contained equipment will be published May 6.

Air-conditioning specifications will appear in the May 20 issue.

**Manufacturers' Groups To Meet May 14-16**

HOT SPRINGS, Va.—Air Conditioning Manufacturers' Association and the Refrigerating Machinery Association will both meet here the second week in May for their annual conventions.

Meeting here May 14, 15, and 16, the Refrigerating Machinery Association will discuss a standardization program which the organization has formulated, according to President D. Norris Benedict.

P. A. McKittrick, president of Air Conditioning Manufacturers' Association, reports that that group will also meet here May 16.

**Frigidaire Appoints 3 New Executives**

DAYTON—Three changes in the executive personnel of Frigidaire Corp. were announced this week by E. G. Biechler, president and general manager.

Roy E. Smithson has been named manager of the commercial products sales division; Lowell McCutcheon, manager of the wholesale division, and Virgil Hetzel, manager of the installation and service division.

Mr. Smithson fills a newly created post, made necessary by the separation of commercial and air-conditioning sales activities through the recent formation of Delco-Frigidaire Conditioning Corp. He has been associated with Frigidaire and its predecessor companies for nearly 20 years.

Mr. McCutcheon, new wholesale division manager, succeeds W. D. McElhinny, who died early in February. He is a long-time Frigidaireman.

Mr. Hetzel, new chief of the company's nationwide installation and service division, has been a General Motors employee for 17 years.

**Virginia Smelting Reduces Methyl Chloride Price**

WEST NORFOLK, Va.—A reduction of 5 cents per pound in the price of "V-Meth-L" methyl chloride refrigerant was announced last week by Virginia Smelting Co. The reduction was effective April 1.

**Commercial Condensing Unit Sales Gain 43% in 2 Months****Mills Novelty Co. Develops Line of Commercial Units**

CHICAGO—Mills Novelty Co. has entered the commercial refrigeration field with a line of condensing units from 1/4-hp. to 7 1/2-hp., in both air-cooled and water-cooled models, for both commercial and air-conditioning applications. The units will be sold through regular dealer channels.

Entrance of Mills Novelty into the commercial refrigeration field is an outgrowth of the company's activity as a manufacturer of counter-type ice cream freezers. Originally, the Mills counter freezers were powered by compressors purchased from outside sources, but as the market expanded, Mills decided to manufacture its own condensing units, which it has been doing for more than a year.

Convinced that its units were sound in design and reliable after a year of such field tests, Mills decided to

(Concluded on Page 7, Column 1)

**Refrigerator is Life-Saver In Tupelo Tornado**

TUPELO, Miss.—An electric refrigerator may be a "life saver" in fact as well as theory, an Associated Press dispatch from this city, stricken in Monday's tornado, indicates.

According to the dispatch, the wife of the publisher of the *Tupelo Daily News* saved her life and that of her canary by taking refuge in her refrigerator while the tornado was at its height.

Tupelo, "experimental ground" of TVA's electrical appliance merchandising program, was covered by *ELECTRIC REFRIGERATION NEWS* in its survey of dealer opinion on the TVA program in the summer of 1934.

**G-E Reduces Price on Model V-5**

CLEVELAND—General Electric Co. has made a reduction of \$5 in the list price of its model V-5, 5-cu. ft. Flatop refrigerator. The change was effective March 30 in the national recommended schedule.

List price of the V-5 in the first zone or "Cleveland area" is now \$174, or \$179 on the replacement contract.

**Kelvinator Organizes Foundation to Study Food Preservation & Air Conditioning**

NEW YORK CITY—George W. Mason, president of Kelvinator Corp. last week announced that the company had established and is maintaining The Temperature Research Foundation, with headquarters at 80 Broadway, New York City as a step

**Air-Conditioning Sales Covered in New Nema Statistics Report**

DETROIT—Sales of commercial refrigeration equipment by manufacturers during the first two months of the year totaled 17,450 units, an increase of 43% over the 12,140 reported during the same period last year, according to reports of 15 companies to the Commercial Refrigeration Section of National Electrical Manufacturers Association.

World sales of commercial condensing units only during the first two months of 1936 totaled 13,613, passing by 1,473 the total for all types of commercial sales during January and February of last year. Sales of condensing units in the United States alone were 9,875 units, strong evidence that this branch of the industry, in this country at least, is making a long-awaited comeback.

Sales condensing units of 1-hp. or under in the United States rose encouragingly in the first two months of the year, with reports of 8,282 units against 5,842 during the same period a year ago. In the over-1-hp. class, sales of 1,493 units were reported, with no comparable figures for last year.

Included in the report for the first time are sales of air conditioners—floor, ceiling, residential, and self-contained types, and sales of commercial condensing units of more than 1 hp. capacity. In the past, reports

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**Alco Valve Opens New N. Y. Branch**

NEW YORK CITY—New branch office of the Alco Valve Co. at 381 Fourth Ave. here was officially opened March 16, 17, and 18 with an exhibit of the company's products.

A large stock room and small shop for testing and repair work are included in the new quarters. A. B. Schellenberg, eastern division sales manager, will be in charge, assisted by August Ulbert, and J. J. O'Donnell.

Refrigeration and air-conditioning contractors and engineers in the greater New York area, and visitors from as far as Providence, R. I., and Trenton, N. J., attended the exhibit.

J. L. Shrode, president of the Alco Valve Co., and P. H. Thompson, research engineer, came to New York from the St. Louis factory for the exhibit.

in extending the benefits of modern science and manufacturing to the American consumer.

This Foundation will be devoted to disseminating the latest scientific facts and figures on temperature research. It will aim to advance standards of health, comfort and leisure among American consumers in the fields of heating, food preparation, and preservation, and air conditioning in home, office, and factory.

The Foundation will operate under an advisory committee which includes Dr. Shirley W. Wynne, former Health Commissioner of New York City; Dr. Warren M. Persons, consulting economist and former professor of economics at Harvard university; Francis Keally, architect; Count Alexis de Sakhnoffsky, consultant designer; Lulu G. Graves, consultant in nutrition and organization of dietary departments; and Anne Pierce, consultant in home economics.

Edward Heitman, chief engineer of Kelvinator Corp., will be director of the Foundation, which will operate in the interest of the public welfare.

"Between 4,000,000 and 5,000,000 American homes today," Mr. Mason stated, "are not equipped for modern electrical living—are, in short, operated under conditions which are little better than those in vogue fifty years ago. The scientists and inventor, the manufacturer, the architect and the

(Concluded on Page 2, Column 3)

**Occupy New Positions at Frigidaire**

ROY E. SMITHSON  
Manager of commercial products sales division.



LOWELL McCUTCHEON  
Manager of Frigidaire's wholesale division.



VIRGIL HETZEL  
Manager of installation and service division.



## Household Financing Killed in FHA Act Passed by Congress

(Concluded from Page 1, Column 1)  
has apparently killed household refrigerator financing by the FHA reads as follows:

"After April 1, 1936, no insurance shall be granted under this section to any financial institution with respect to any obligation representing any such loan, advance of credit, or purchase by it in the amount of \$2,000 or less for the purpose of financing the purchase and installation of equipment and machinery upon improved real property."

Most refrigerator manufacturers already had plans underway to provide time-payment facilities for dealers operating under the FHA plans before the old Act expired. Some of the insured financial institutions are said to be ready to announce plans of their own to finance appliance sales.

Some government officials believe that the Electric Home & Farm Authority will replace the FHA as a government agency for the financing of electrical appliances. The EH&FA rediscovers the paper of approved dealers, and if the plans operate through a local utility, the utility will do the billing and collecting.

There are several phases to the EH&FA setup which will prevent a rapid spread of its services, however. It will operate only in communities where the power rates are low enough to meet requirements it sets up; and the retailer must be able to meet recourse in case of customer default, which he didn't under FHA.

## Aberson Reports Bright '36 Sales Outlook Among North Dakota Farmers

CINCINNATI — Believing that farmers' incomes will be affected by the fact that heavy winter snows have left abundant moisture in the ground which should guarantee healthy crops, Henry Aberson, of the Aberson Electric Co., Crosley dealer in Dickinson, N. D., a recent visitor to the Crosley factory here, reported a bright sales outlook for his state for 1936.

With Mr. Aberson were two of his service men, Otto Thress and Kenneth Mann, who remained to take the factory service course.

## Top Topper



Charles S. Witherspoon of Long Island, N. Y., top "Topper" for 1935 and chairman of the board of directors of General Electric Co.'s Toppers Club, nationwide organization of 10,000 G-E refrigerator salesmen.

Mr. Witherspoon led the country's G-E salesmen in dollar volume for the year, with sales totaling \$314,000. During the past six years, his sales of refrigerators and other appliances were \$1,364,211.

He is a direct descendant of John Witherspoon, one of the signers of the Declaration of Independence, a member of the Continental Congress, and president of Princeton university from 1768 to 1794.

## Mobile Dealers Sponsor 'Kitchen Chautauqua'

MOBILE, Ala.—"A Kitchen Chautauqua," dealers of this city dubbed the annual spring home appliance show held here March 24-26, at which Mrs. Gertrude Burbank, home economist, gave lectures and demonstrations on "how to win freedom from the kitchen."

Dealers exhibiting included Adam Glass & Co., Alabama Power Co., Jesse French & Sons, Home Appliance Co., National Furniture Co., Nelson Radio & Supply Co., Phillips Furniture Co., Quigley Specialty Co., Roche Home Equipment Co., Sears, Roebuck & Co., and Weatherby Furniture Co.

## Kelvinator Research Foundation Termed Aid to Better Living

(Concluded from Page 1, Column 5)  
designer have made vast strides since then of which the general public should be taking full advantage.

"In the public interest, there must be better public understanding of the ease with which the average home can be brought up-to-date. Today the average home owner mistakenly believes that only the wealthy can afford the aids to health and comfort which science has made possible.

"In establishing The Temperature Research Foundation, we believe we are performing a public service which will raise standards of living.

"The Temperature Research Foundation will utilize many methods of disseminating accurate information regarding food preservation and preparation, refrigeration, air-conditioning, and allied subjects throughout the country. Naturally, the Foundation will include in its sphere of activity the subjects of humidity control, scientific dehumidification and the proper filtration and circulation of air.

"It will prepare and distribute pamphlets by leading authorities; it will provide material and lecturers for talks before interested groups of men and women; and as new developments in heating, cooking, refrigeration, and air-conditioning appear, they will be given the widest dissemination through all possible channels of communication.

"It is the aim of the Foundation to serve as a clearing house of information on all phases of the subject of temperature research."

## Crosley February Sales 66% Higher Than 1935 Mark for Month

CINCINNATI—Sales of Crosley electric refrigerators in February were about 66% ahead of those for the same month in 1935, reports Powell Crosley, Jr., of Crosley Radio Corp.

Speaking of radio Mr. Crosley said: "We plan to get an early start for the 1936 radio season. The red-hot political campaign will mean a banner year for radio, and every plan is being made here at the factory to take advantage of it."

## Sales Idea of the Week

By V. E. (Sam) Vining

Here is a very practical sales experiment.

Get the help of your wife and the two of you put down on a sheet of paper the names of fifty men whom you know—friends, neighbors, associates outside of your own business connections.

Now write after each name an exact classification of the business in which each acquaintance is engaged.

Here is one man in the insurance business—but exactly what kind of insurance does he sell—fire, life, liability, automobile, or just what?

Here is a man in the brokerage business—but what kind of brokerage?

And so on through the list.

Now take a look at it. You will be surprised at your lack of information about the very people with whom you associate daily.

Now scratch your head and wonder just how many of these men know *exactly* what you do for a living. An analysis of the list will startle you.

Here are fifty men, whom you have been pretending to know—who could, and should, not only give you all of their business but should, and would gladly be classed as unofficial sub agents—if they but knew *exactly* what your business might be.

The next step in the experiment is obvious. Call on the whole list. Tell 'em about your business and ask about their's. I'll bet you both get some business.

No man is big enough to make his own living.

## Westinghouse, G-E, Norge, Kelvinator Advertising Listed

(Concluded from Page 1, Column 2)  
whose refrigeration advertising totaled 653,138 lines appearing in 65 cities. Fifth space user was General Electric with 582,733 lines carrying its message in 58 cities.

Ranking ninth among the space users, major electrical appliance manufacturers last year purchased 7,722,000 lines—5,572,098 of which were devoted to electric refrigeration advertising. The automotive industry headed the list of newspaper advertising purchasers with a linage of 58,202,000 which ran in the 369 papers.

The linage for radio advertising was 4,862,000, while manufacturers of heating and plumbing equipment used a total of 3,940,000 advertising lines, with that for air-conditioning equipment representing an important part of the total, the report indicates.

Figures showing the comparative amounts of advertising linage used by individual electrical appliance manufacturing companies during 1934 and 1935 are published below.

Newspaper Advertising Linage Used By Electric Refrigerator Manufacturing Companies in 1935, Based on 369 Papers in 95 Cities

Refrigerators	Lines
Frigidaire	933,941
Norge	875,495
Kelvinator	783,024
Westinghouse	653,138
General Electric	582,733
Electrolux	535,177
Leonard	239,083
Crosley	209,688
Grunow	164,926
Stewart-Warner	94,403
Gibson	71,241
Atwater-Kent	67,702
Fairbanks-Morse	58,625
Sparton	32,153
Universal	30,926
Hotpoint	15,258
Apex	4,242
Williams	3,778
Superflex	3,415

Total, Refrigerators ..... 5,575,098

Advertising Linage Covering Air Conditioning Used by Manufacturers During 1935, Based on 369 Papers In 95 Cities

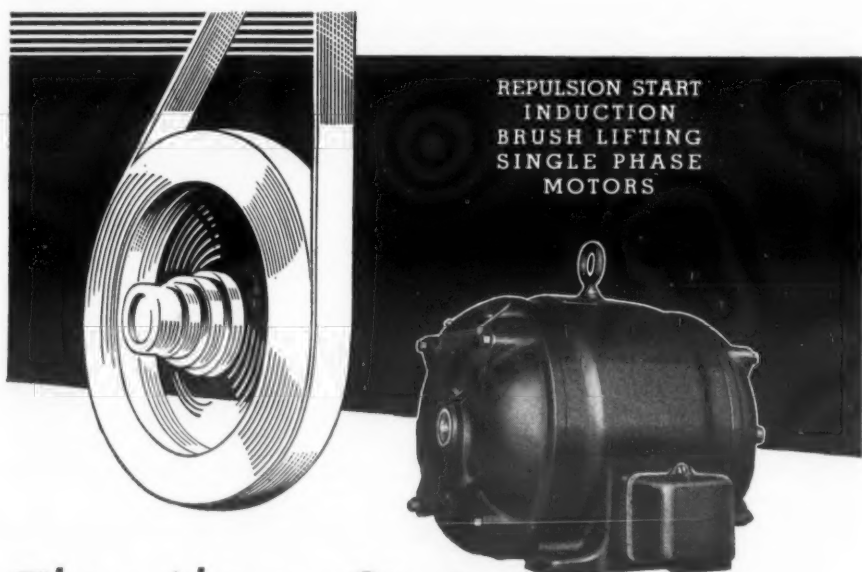
	Lines
Carrier	77,863
Frigidaire	19,409
General Electric	18,459
York	18,049
Kelvinator	12,130
Westinghouse	5,335
Strang	4,896
Airtemp	4,585
Delco Heat	3,558

## Feb. Best Appliance Sales Month in F-M History

CHICAGO — Sales of Fairbanks-Morse home appliances for February were 25% greater than for any previous month in the company's history, reports W. Paul Jones, general manager of the Home Appliance Division of Fairbanks, Morse & Co.

## Correction

In a story on page 12 of the April 1 issue of ELECTRIC REFRIGERATION NEWS under the heading "Freeman Explains Legislation Extending Rural Electrification Plan for 10 Years" it is stated that "Measures now awaiting final Congressional action will extend the Rural Electrification Program of the government over a 10-year period with an appropriation of \$40,000 a year." This should have been "40 million dollars a year."



## They Always Start AGAINST HIGH PRESSURES —and HEAVY LOADS

Always noted for their load-starting and "Keep-a-Running" ability—Century Single Phase Motors naturally took a commanding position in the early development of Electric Refrigeration.

This leading position has been maintained!

Constant research and development has always assured the ability to meet and beat the rigorous requirements of industry progress — of which high pressure Freon Refrigeration Compressors are typical.

SAFETY NOTE: Ordinarily, "over fusing" is not necessary to take care of heavy starting loads because high starting torque is secured with low starting current.

CENTURY ELECTRIC COMPANY  
1806 Pine Street • • • St. Louis, Mo.  
Offices and Stock Points in Principal Cities

**Century**

**MOTORS** Sizes, 1/8 to 40 Horse Power

## Important TO MANUFACTURERS OF DISPLAY REFRIGERATION EQUIPMENT

The new LOXIT type Ace Hard Rubber Doors are attracting wide attention due to their new and valuable improvements in construction and design. • It will pay you to investigate LOXIT at once as the new doors are now available at no extra cost. Write to

AMERICAN HARD RUBBER CO.  
11 MERCER ST., NEW YORK, N.Y.  
AKRON, OHIO  
111 WEST WASHINGTON ST., CHICAGO, ILL.

## LIFETIME COILS AND UNITS

CUSTOMIZED COILS:  
SUR-E-FEX, HUM-E-FEX, LOUVR-E-FEX, AIR-E-FEX  
CUSTOMIZED UNITS: FAN-E-FEX, (Standard and DeLuxe), TRANS-E-FEX, DRAFT-E-FEX, BLO-E-FEX, VERT-E-FEX, For Refrigeration, BREEZ-E-FEX, COMF-E-FEX, SAN-E-FEX For Air Conditioning. Send For New Literature

**KRACK**  
ENGINEERED

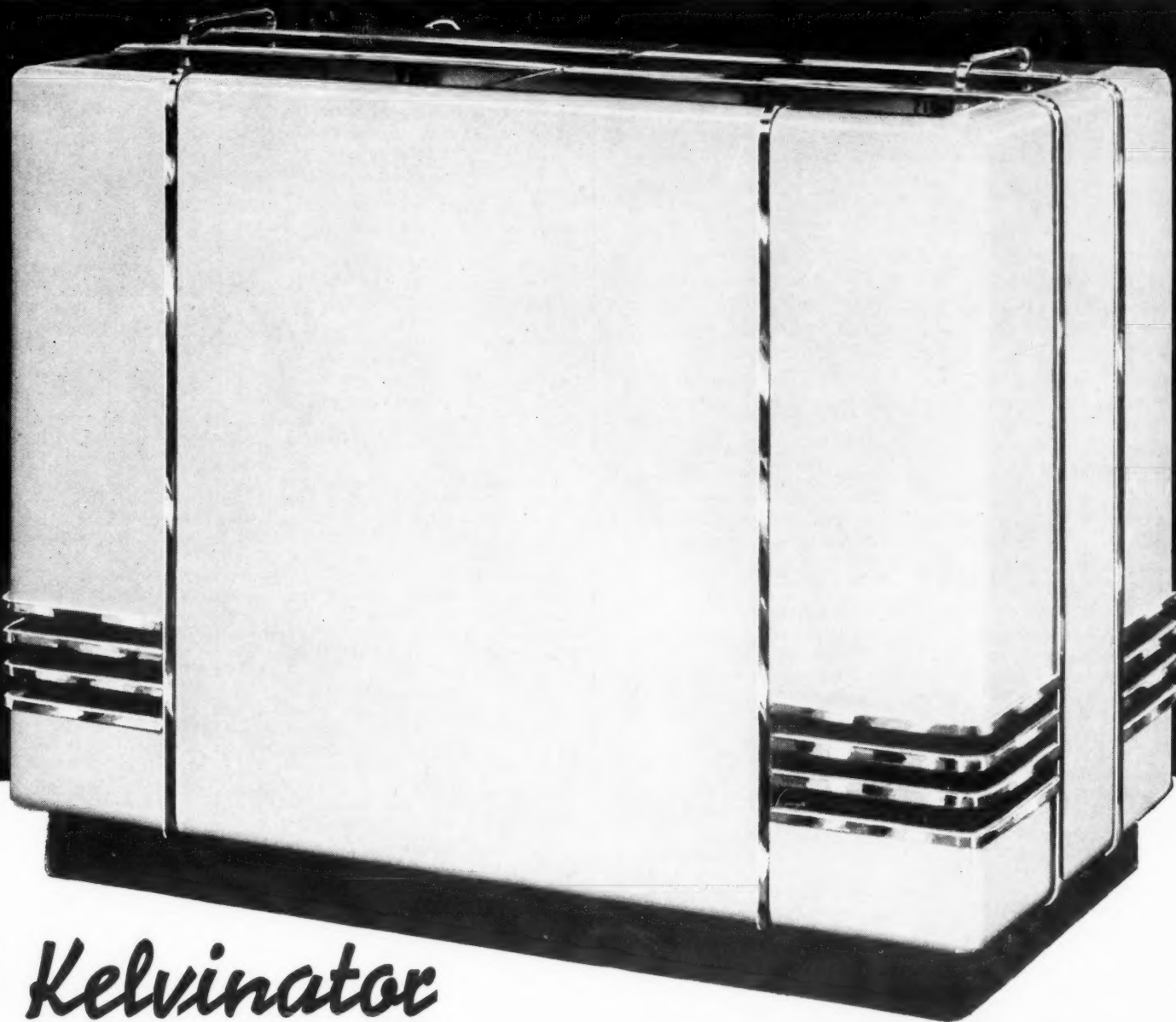
REFRIGERATION APPLIANCES, INC., 1342 W. Lake Street, Chicago



## "ROLL-TOP"

A new patented top design which eliminates the necessity for lifting lids—and yet there are no hinges—lids are flush when closed. Permits installation of the cabinet under a shelf or back bar—the lids glide over each other on rollers—a light touch rolls back either lid.

This cooler available in three colors—red, white and Nile green—trimmed with bright chromium—black base and top. The model shown at the right—the BC150—has a capacity of 150 6-oz. bottles. Available in 110 or 220 volt current—AC or DC—32 volt at slight additional cost.



# These 1936 Kelvinator Beverage Coolers Spell . . . NEW SALES OPPORTUNITIES FOR KELVINATOR DEALERS . . . .



## "BUBBLER TOP"

Either the smaller cooler, pictured above or the larger, may be equipped with water cooling facilities at a reasonable extra cost. The smaller type cooler is particularly adapted for use by gas stations and similar places, where the coolers serve both as money makers and goodwill builders. The above cooler has a capacity of 90 6-oz. bottles.

The Kelvinator commercial dealer in 1936 is literally sitting on top of the refrigeration world! He has everything—an unequalled line of products—every one with big profit possibilities.

For example, look at these two new beverage coolers. So beautiful, they were the sensation of the recent Bottlers' Show. And their high-speed cooling, their capacity without bulkiness, their amazing economy of operation, have already built up a tremendous sales volume all over the country.

And no wonder sales have been so phenomenal. Think of the market which now exists—and which is steadily growing—

**Every GAS STATION, ROADSIDE STAND, GROCERY, DELICATESSEN AND DRUG STORE IS A PROSPECT for the Kelvinator Dealer!**

Every place where bottled beverages can be sold—no matter what make or what kind—no matter what sized bottle—needs this new electric beverage cooler.

But beverage cooling is only one fertile field for Kelvinator sales in the liquid cooling market. The Kelvinator dealer also has outstanding products for water and milk cooling—and a range of equipment large enough to take care of every need.

Add to all this standard commercial refrigeration, air conditioning, and automatic heat and you can begin to see what it means in 1936 to hold the Kelvinator commercial franchises. No other franchise compares with it in money making possibilities.

PERHAPS you may qualify for one of the commercial franchises—why not find out by calling the nearest Kelvinator distributor or writing Kelvinator Corporation, Franchise Department, Detroit.

**KELVINATOR CORPORATION**  
14250 PLYMOUTH ROAD, DETROIT, MICH.  
Factories also in London, Ontario, and London, England

*Sensational:*

**FOR BEAUTY, COMPACTNESS, ECONOMY, CAPACITY, AND HIGH-SPEED COOLING**

# KELVINATOR



# Around the World

With George F. Taubeneck

THIS week, George Taubeneck, editor of the News, is seeing the sights in Singapore. In a cable message he reports that stories about Australia are on the way to Detroit and that he has visited Java, also Papua (which was not on his original schedule).

He will leave Singapore April 9 on the S.S. *Karajola*, arriving in Calcutta, India, on April 16. He expects to travel across India by train to Bombay and then take a steamer to Port Said, making a short stop at Aden, Arabia.

He will spend some time in Egypt and Palestine and will make stops at Malta and Marseilles on the way to Paris, France, where he will arrive sometime after the middle of May.

His European itinerary has not been definitely decided but he plans to visit Milan, Italy; Vienna, Austria; Berlin, Germany; Stockholm, Sweden; Amsterdam, Holland; and other principal cities. He will attend the International Congress of Refrigeration at The Hague, June 16 to 27, 1936, where he will deliver a paper on "The Development of the American Household Electric Refrigeration Industry."

## Eternal May

Perhaps the best thing we can say about Honolulu is that it *won't disappoint you*. It's "as advertised." Almost everything about the place is fascinating, and warming, and comfortable, and altogether cheerful.

While there you won't feel like arguing or fussing or fuming or fretting over anything or with anybody.

Rainbows day and night; sunshine which pours into your muscles like some golden liniment, putting spring in your step, flex in your biceps, and a gleam in your eye; gorgeous scenery; friendly and charming people—it's a paradise for sure.

Time doesn't mean much over there. You don't know or care what day of the month it is, or what month of the year. There's only one season, and that's spring.

Temperatures range from 65° to an infrequent 90°, and the water, in which practically everyone disports continually, is nearly always in the neighborhood of 75°.

Every day is May Day in Honolulu.

## Poor Food, High Prices

Before we go into any more raptures over the loveliest spot we have yet seen, perhaps we'd better wise you up as to some of the drawbacks.

First of all, the food. You can comb the Island without finding a decent meal—unless, of course, you are invited to somebody's home. Not even the best hotels serve palatable meals.

And the prices! Everything is costly. Living standards are high; prices are high. And especially during the tourist season (January, February, and March), at which time we were unfortunately caught, price tags on everything from apparel to hotel rooms will remind you of Miami Beach and Atlantic City.

The stores and shops, however, show the finest of merchandise, and have everything you'd find in metropolitan stores on the mainland except the sales tax. And what a relief! It's seldom you find a penny in your pocket in Honolulu.

## Coming and Going

Weeping is a favorite pastime among the passengers on the decks of boats coming into and leaving Honolulu Harbor.

We'll confess we felt quite lumpy-in-the-throat when it came our time to sail out of this enchanted spot of flowers and music and caressing air, with the verdant arms of its harbor outstretched, pleading with you not to leave.

First you see emerald-and-gray hills rising out of the water when you approach Honolulu, and then the Gibraltar-like Diamond Head, that forbidding sentry of an extinct volcano, juts right out into the harbor's entrance.

Comes then, sight of sights! Nestling at the foot of Punchbowl crater, and backgrounded by a voluptuous mountain range which is the Island's vertebrae, is a modern, glistening metropolis, sheltering some 150,000 happy human beings.

Tropical trees and flowers, delightful odors, invigorating sunshine, diving brown-skinned mermen, and then—the band. This native organization greets and farewells every ship with stirring renditions of "Aloha Oe," "Hawaiian Paradise," and a number of other Island songs (many of which were written by R. A. Anderson, treasurer and refrigeration manager of the Von Hamm Young Co.).

With the band is a mixed quintet of the sweetest, most silvery voices you'll ever want to hear. Surmounting all is the unrivalled coloratura soprano of LINA MACHADO, who is getting along in years, but who is still "the Songbird of the Islands."

## Hawaiian Music In the Moonlight

To my Mother, Honolulu was the Isle of Golden Dreams.

In her early girlhood she saw a play with an Hawaiian locale, "Bird of Paradise," which left an oddly lasting impression on her; and from then on Honolulu spelled Romance to her—although she did not live to see it.

She read about it, looked avidly at pictures taken there, and dreamed about it; but most of all she loved Hawaiian music, which she played, sang, and listened to with more delight than she evidenced in any other single pleasure.

Hence from childhood I had been inculcated with a strong desire to spend some time in Honolulu.

To tell the truth, though, I wasn't particularly crazy about Hawaiian music until I got there. It simply doesn't sound the same unless you hear it played in a setting of moon-struck palm trees.

First of all, the band gets you. Next, if you stop at the Royal Hawaiian, Halepuni, or Moana Seaside, the three big hotels on Waikiki Beach, you will hear the most soothing and romantic concerts imaginable every evening in outdoor courts.

Of course you know that the steel guitar, with its glissando innuendos, and the subdued thrumming of ukeleles form the background for those pure, serene Hawaiian voices.

But what you will notice particularly, if you are musically inclined, is the metronomically accurate *rhythm* of their singing.

Your dosage of Hawaiian music won't be limited to formal concerts. In fact, it's the delightful informality and unexpected occurrence of Hawaiian singing and ukelele which make you love it so.

Any place, any time, and especially "in the evening by the moonlight," members of this naturally musical race will be heard singing and playing on street corners, at the base of a palm tree, in cars and trucks, on the beach, in their homes.

## Those Leis

During the recent Century of Progress exposition in Chicago, a Midway concession calling itself the Hawaiian Village created much mirth among Chicagoans and visitors by advertising, "A Lei with Every Meal."

But in Hawaii you don't laugh at either the pronunciation of the word or the custom. The lei symbolizes so beautiful an act of friendship, it looks so lovely and smells so nice, that you feel much more like crying than guffawing when one is placed around your neck.

If you have friends in Honolulu waiting to greet you upon your arrival, they may take the tug out to meet your ship an hour before it docks.

If so, they'll probably swoop in upon you in your stateroom just as you are shaving underneath the chin, and drop half a dozen fragrant leis around your neck.

Hawaiian women make leis by the simple process of stringing dozens of flowers on a thread until they have achieved a loop about a foot and a half in diameter.

Carnations, roses, gardenias, and exotic island blooms of many varieties form these leis. They sell for 25 cents apiece, unless made from out-of-season flowers, in which case the price is doubled.

When you leave the Islands you are again draped with leis. These last floral gifts you are to toss into the harbor as your ship recedes from shore. According to the local belief, if your lei floats back to the land, some day you'll come back to Honolulu. Hope mine made the riffle.

Frequently people attempt to take flower leis back to the mainland with them. Women, especially, who have noted how a lei enhances their beauty in evening dress, attempt to squeeze leis into their boat's already overstuffed refrigeration facilities.

But seldom does this work out satisfactorily. One would practically have to have a portable refrigerator along for the entire journey home to preserve the dewy freshness of a lei from Honolulu harbor back to the Elk's Club dance in Cleveland.

However, you can buy native Lei Perfumes at Gump's famous store. (To you hinterlanders, Gump's is probably the finest shop for luxury items in both San Francisco and Honolulu. Neither Andy, Bim, nor Mrs. de Stross are connected with the management.)

## Flowers, Big Trees

Official flower of Hawaii is the hibiscus which, in its thousands of hybrid color combinations, dominates the Islands florally.

Whether plucked or unplucked, the hibiscus bloom lasts but a day. During its appointed time, however, it retains its freshness fully as well in a waterless vase as on its original plant.

Cooper Ranch, some 30 miles outside of Honolulu's outlying residential sections, has some 2,500 catalogued varieties under cultivation.

Mexico's night-blooming cereus (a climbing variety of cactus which is indigenous to southwestern North America) was introduced into the Islands more than a century ago, and now grows in great profusion there.

Ginger flowers—torch, red, white, bell, and Kahili—are among the Islands'

## Welcoming More Visitors from Detroit



(1) Sirens and belles greeted the Detroit Lions, professional football champions, as they arrived in Honolulu, during the editor's visit, for an exhibition game. (2) George Christensen, acting coach, is welcomed by Gov. J. B. Poindexter of the Islands.

floral boasts, as are the silver sword plumaria, cup-of-gold, passion flower, and bird-of-paradise.

As for trees, well, you never saw such trees in all your born days.

Take the banyan trees, which were imported from the Orient. They grow, spread out, and suddenly the branches drop offshoots into the ground. These offshoots take root, and become new trunks, from which more branches go out to send more offshoots into the ground to become more trunks, and so on ad infinitum. The result covers quite a lot of territory. And gives shade enough for a regiment.

Then there's the Monkey Pod tree, which spreads out its branches, in the same manner that normal trees do, to a greater horizontal distance than you might believe possible.

Residential sections are made ploriously colorful by the umbrella-like Poinciana Regias, which in summer are ablaze with scarlet and gold blossoms: by the Rainbow Shower, whose blossoms are really a riotous rainbow; by the Pink Shower; and, of course, by the Date, Traveller's, and Coconut Palm trees.

To our way of thinking, the Coconut Palms, with their sky-high trunks which zoom into the air at such crazy, swooping angles, are the most picturesque feature of the Islands.

These are the trees which barefoot boys ascend so rapidly, the trees which line the beaches, and appear in so many photographs on the picture postcards from Honolulu.

Take it from us, a couple of Coconut Palms in the foreground make an artistic photographic study out of almost any ordinary snapshot.

Other trees common to the Islands are the Hala, Kiawe, breadfruit, avocado, papaia, bana, guava, mango, and lichee nut. There's also one very funny one, the sausage tree, which hangs from its branches the darndest sausage-like pods you ever saw.

Rice is grown in the Islands (to supply the Orientals with their chief item of diet), and Kona coffee (the enthusiasm for which this writer does not share). Sugar and pineapples are the chief agricultural products, of which more later.

## The Hula

Most Americans associate the native Hawaiian dance, the hula, with the cheap, fanny-wiggling imitations which they may have seen at carnivals, sideshows, in vaudeville, or where not.

There's a lot of difference between those quasi-suggestive exhibitions, and the floating, rhythmic movement of a real hula as practiced by the native Hawaiians.

Even so, there are few vestiges of native life in the Islands so commercialized today as the hula. Practically every genuine hula dancer—and there aren't many really good practitioners of the art—is either in a hula troop, or a teacher, or both.

Hula troops entertain regularly at the larger hotels, and at the restaurants which give "luau," or native feasts.

The teachers conduct three or four classes a day, and give lessons. It seems that almost every woman who spends a week or so in Honolulu wants to learn the hula. It's good reducing exercise! Also, she goes home and teaches it to her nieces and granddaughters, who will look right cute doing the hula at parties.

We got acquainted with PILANI MOSSMAN, who is perhaps Honolulu's leading teacher, and one day went down to watch her teach a class.

It was so funny we almost got sick trying to suppress the laughs, what with watching dowagers trying to unlock rigid spines which had been held stiffly for 20 years, and observing the ludicrous movements of so many different sizes and ungainly shapes.

Also we met KAHALA and ODETTA BRAY, two of the Islands' most beautiful native girls, who turn the hula into something quite unforgettably lovely. Every movement of hands, knees, hips, feet, and waist interprets something, so that each dance tells a story.

Kahala is a very nice, well bred, highly educated girl. Odette tried her luck in Hollywood recently, but came back "because life was too rushed to live." Pilani's father is a Sunday School superintendent.

Now! Are you disillusioned?

## Pineapples

Hawaiian pineapples are undoubtedly more famous than any other product of the Islands, although sugar by far leads all the rest. But of all places in the world, Hawaii leads in the growing and shipping of pineapples, which are pretty well advertised.

On every island of consequence in the group hundreds and thousands of acres of land are under cultivation to produce this fruit. Growing very close to the ground, it takes from 14 to 20 months for a crop to mature and ripen.

Harvest season is June, July, and August. By the first of August the canneries are generally running 24-hour shifts in order to seal the fine flavor of peak ripeness.

Natural rainfall provides all the watering that pineapple plants need; the expense of artificial irrigation thus being saved. Frequent spraying with iron sulphate or copperas is necessary, however, and weeds must be weeded.

Dole's famous pineapple cannery is open for public inspection at all times. American manufacturers might be interested to know that not only is food, medical attention, and recreation provided for the workers, but the children of women employees may be brought to a factory-located kindergarten, where they keep out of mischief and learn things useful while mamma wins bread by canning pineapples.

"The world's biggest pineapple," a water tower built in the shape of a pineapple, adorns the top of the Dole plant.

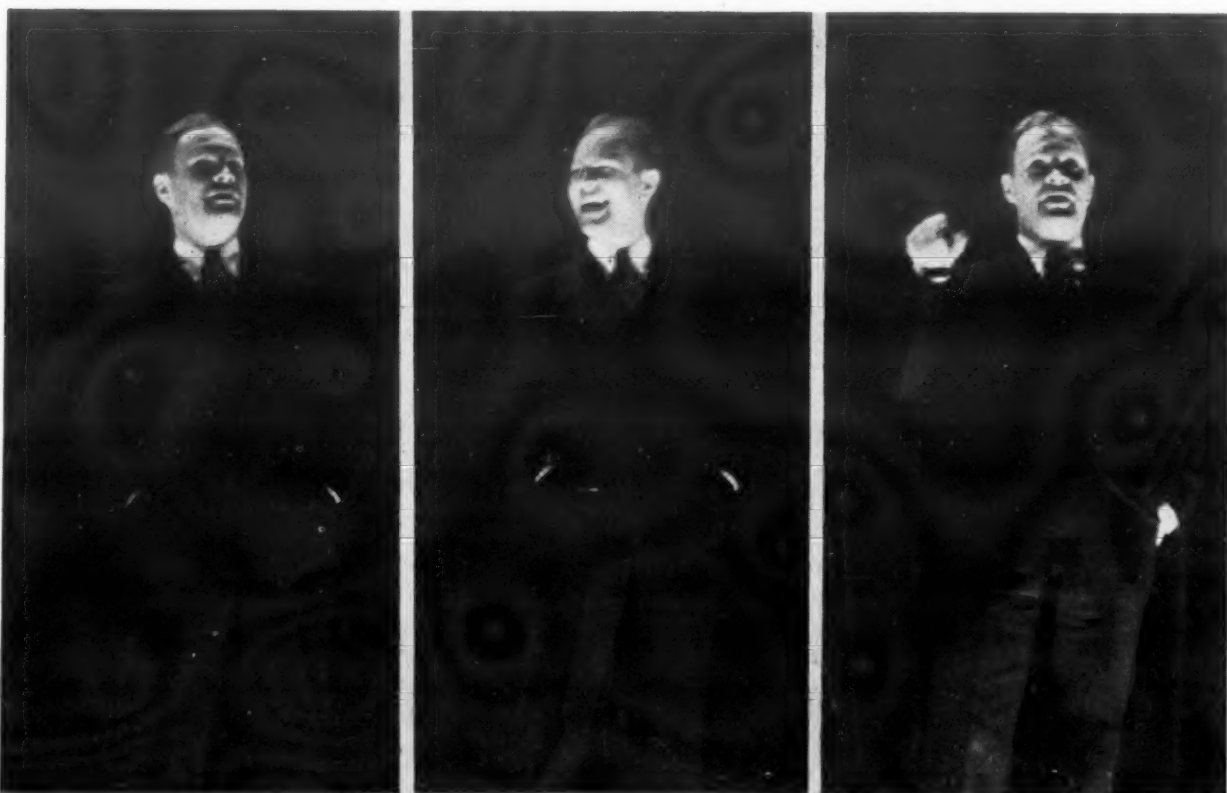
## Sugar

Close to a million tons of sugar has been refined from one year's yield of Hawaiian-grown sugar cane. Normally seven tons of raw sugar can be won from an acre of sugar cane.

Thoroughly irrigated and fertilized, a crop of sugar cane ripens on the Islands in 18 months to two years—considerably longer than Cuba requires to produce a sugar-bearing crop. However, an Hawaiian cane field will

(Continued on Page 5, Column 1)

## Presenting the Message of Refrigeration



George Taubeneck is addressing groups of refrigeration and air-conditioning men in most of the countries he is visiting on his world tour. Here are three characteristic poses: (1) Recounting the industry's past achievements. (2) A funny story "takes" with the audience. (3) Outlining opportunities for future development.



(Continued from Page 4, Column 5)  
recrop itself regularly from eight to 14 years before it becomes necessary to replant.

Through the good offices of Lewers & Cooke, we spent an afternoon at the big Aiea sugar plantation and refinery, which is fairly near Honolulu.

This is as self-contained an enterprise as ever you'll see, with company-owned dwellings, roads, water supply, commissary, movies and other recreation facilities, and practically its own government (in the hands of foremen and overseers).

Here the workmen live unusually well and contentedly. Ever hear of an Hawaiian sugar plantation strike?

The refinery itself is a marvel of chemical and engineering skill. L. E. PHILLIPS, chemist of the Honolulu Plantation Co., and NEWTON CRITES, boiling house superintendent, kindly took time off to show us the works.

When the cane has been cut and transported from the fields to the mill in railway cars, it is dumped into mighty crushers, which squeeze the juice from some 110 tons of cane an hour.

After the cane pulp has been pressed practically dry, it becomes bailed "bagasse," which is used for fuel to drive the power generators, and is sold to the mainland to form the base for Celotex.

The juice is boiled and reboiled, limed, clarified, and sent through bone char to whiten it. Eventually sugar crystals are separated from the molasses, which later is sent back through the mill again so that more sugar crystals can be reclaimed from it.

The centrifugal separator which withdraws the sugar crystals from the molasses is quite a clever machine. It is a huge steel drum, with tiny perforations in the side, which revolves at terrific speeds when molasses is dumped inside it.

By centrifugal force the molasses is whirled through the perforations, leaving sugar crystals at the bottom of the drum after its rotations have been slowed down to a stop.

After being washed of all impurities in these same machines, the crystals are dried in more slowly rotating ovens.

Going through this sugar mill was the pleasantest trip-through-the-plant we've ever taken, and this writer claims the world's long distance championship for hiking through factories. Chief reason: it was one factory which constantly was pervaded with a pleasant odor.

Hawaii's sugar industry has been developed by American capital, American chemists and engineers, American ingenuity, American tariffs, and everything but American labor.

Shortly after King Kamehameha III decreed the Great Mahele, which granted land to Hawaiian citizens permanently (previously land grants reverted to the crown upon the death of the grantee), the Hawaiian sugar industry really got under way.

It received its first big boom during the Civil War, when northern states would not accept sugar grown in southern plantations, and when the Gold Rush of '49 started the building of California.

Biggest problem of the pioneer sugar planters in Hawaii was irrigation, sugar cane requiring some 4,000 tons of water per potential ton of sugar, and the Hawaiian land being dry and overporous.

Eventually it was discovered that an apparently inexhaustible supply of artesian water could be tapped all over the Islands.

Ditches, flumes, tunnels, and reservoirs were constructed; steam plants were installed far down into the topsoil; and eventually one of the great engineering marvels of the day took shape to convert arid Hawaiian volcanic land into richly productive soil.

Hawaiian sugar barons have "run" the Islands, politically and economically, ever since the latter part of the nineteenth century.

### Honolulu Is Not Hawaii

So far in this series on the Hawaiian Islands we have used the terms "Hawaii," which is commonly used in the United States, and "the Islands," the term used by residents to designate the Territory of Hawaii.

But properly speaking, Hawaii is the largest island in the Hawaiian archipelago, a chain of islands which extends diagonally across the Pacific Ocean for some 1,500 miles. On the southeastern end is the "big island" of Hawaii; on the northwestern end is the very small Ocean Island.

Within limits of 400 miles may be found the eight principal islands of the group, which total 6,400 square miles in land area. They lie between the north latitudes of 18° 54' and 22° 15' and the west latitudes of 154° 50' and 160° 30', which makes them semi-tropical in climate, vegetation, and location.

From both commercial and scenic standpoints, the Hawaiian Islands

really get down to four: Hawaii, Kauai, Maui, and Oahu. (The others are Molokai, Lanai, Kaolawe.)

Most travelers to the Islands never get to Hawaii, it is surprising to note, for Honolulu—the main port of call—is on the island of Oahu. Hawaii's chief city is Hilo, second largest in the Islands.

### Oahu

So completely enchanting is Honolulu and its nonpareil Waikiki Beach that few visitors want to go any farther. But there's much of grandeur and beauty in the other islands, as we shall see, and plenty on Oahu itself that should be seen.

If you've ever envied Sir WILLIAM BEEBE and his undersea bathoscope trips, go around to the Aquarium and goggle at the unbelievably weird collection of tropical sea life.

There's also Iolani Palace, with the only throne in the United States of America; Bishop's Museum of Polynesian culture, and the Academy of Arts; University of Hawaii, where many wealthy American families are now sending their adolescent scions; Kawaiahao Church, constructed of floral-wreathed coral; the symmetrical Mormon Temple, second only to the one at Salt Lake City; Mount Tanta-

lus and Diamond Head (which is paralyzingly romantic in the moonlight); and, best of all, the Nuuanu Pali.

This magnificent cliff (the one over which the conquering King Kamehameha pushed the unfortunate residents of Oahu) has at its base a fertile plain running into the sea on one side and bumping flatly into a 600-foot-high perpendicular wall on the inside. The effect is startling, the view one which will lead you into a mood for silent prayer.

Near the Pali is a spot where the high velocity of the wind scoops water out of a pocket on the side of the mountain and shoots it upwards—a waterfall running uphill!

There's also Pearl Harbor, the naval base, Fort Shafter, Fort Kamehameha, Hickam Field, and Schofield Barracks, biggest U. S. Army post, which was carved out of an untenable wilderness under great handicaps. The soldiers who built it had it tough; but it's pretty nice for them there now.

### Hawaii

Twice the size of all the rest of the Islands put together, Hawaii has a volcanic wonderland simmering around the two 14,000-foot summits of Mauna Kea and Mauna Loa. On the

slope of the latter is the famous active volcano, Kilauea.

These snow-capped peaks are the tallest in the Pacific Ocean. Kilauea is a shining, black expanse of some 3,000 acres of cooled lava, cracked by fissures from which hot vapors are emitted. Spasmodically molten lava boils up from the firepit.

Nearby are fantastic lava formations, such as the famous Pele's Hair and Tears, bubbles, tree molds, arches, and the blow-holes in the lava through which tide force geyser-like water-spouts. There's also a beach of black sand!

On Mauna Kea are cattle ranches, truck gardens, rice patches, and sugar cane fields. Down further in the Kona country are coffee fields, "big game" fishing, and idolistic natives.

### Maui

Named for a Hawaiian demi-god, and situated between Oahu and Hawaii, Maui is second only to the latter in size. It also has a dormant volcano, the world's largest, Halekale, which is a 10,000-footer with indescribable color effects painted by Nature on the walls and cones of its mighty crater.

Its name means "House of the Sun," which is derived from the awesomely

fiery sunsets and sunrises which may be viewed from its rim. With a diameter of 21 miles, you could drop an average city in the pit of this crater.

Adjacent is a series of picturesque gorges and smaller valleys, among which is Iao, the "Yosemite of Hawaii." In this latter is a volcanic freak, "The Needle," a skyscraping spire which juts up from the valley to tickle the ever-present clouds.

Wailuku is a thriving little village serving the sugar and pineapple plantations and cattle ranches. Lahaina, less busy, was once the capital city of Hawaiian kings, and the wintering for whaling fleets.

### Kauai

Known as the "garden isle" because of its fancy foliage, Kauai also has these distinctions:

Captain Cook first landed here (1778).

Oldest of the islands, geologically.

Only main island not conquered by Kamehameha.

Waimea Canyon, compared to Grand Canyon of Arizona by nearly all visitors, is here.

Has the remains of an old Russian (Concluded on Page 6, Column 1)

# Straight Ahead Mister!

• All signs, this year, show a clear road to the greatest profits ever made by Combustioneer dealers. • It's straight ahead to new sales records for this depression-proof product which led by a mile all appliance sales increases in 1935. • A few months ago we said "Combustioneer is going places." Well, today Combustioneer IS THERE—right on top of the greatest ready-to-buy market ever cultivated for merchandising and specialty selling dealers. • Today Combustioneer's great plant expansion program—astonishing product superiority and dynamic all-season sales plans offer profit possibilities too tremendous to be ignored by any merchandising outlet. • And we will lay on the line a franchise story that's loaded with twice as much profit-per-volume as any other product you ever sold. And the proof of that statement is yours for a three-cent stamp. • Write today to Combustioneer Division of The Steel Products Engineering Company, Springfield, Ohio.

## Combustioneer

### Automatic Coal Burner

Combustioneer, Springfield, Ohio. - - - I am using a three-cent stamp. So it's up to you to furnish the proof.

Name \_\_\_\_\_

Address \_\_\_\_\_



# Around the World

With George F. Taubeneck

(Concluded from Page 5, Column 5)  
fort (well preserved, but hidden behind cactus at the mouth of Waimea river), which was part of an abortive attempt by Russia to colonize the island.

Outside of the kaleidoscopic phantasmagoria of variegated hues tinted on the canyon, Kauai's most interesting sights are Spouting Horn (a musical salt-water geyser), and the Sliding Bathub, which is a gentle waterfall dropping into a freshwater swimming hole—a natural chute-the-chutes.

Kauai's geologic age has softened its once-rugged volcanic terrain, and permitted verdant flora to carpet it everywhere.

## A Century of Progress

Not until one has visited other islands of the Pacific and noted the still-primitive modes of living extant in many spots on the map of the South Seas does one realize just what has happened to the Territory of Hawaii—largely because of the active presence of sugar, pineapples, and missionaries—in less than a century.

It was not until 1778 that Captain JAMES COOK, the first white man to set foot on the Islands, sailed over from Merrie Englands; and at that time natives were living in grass shacks and grass skirts, just as they are supposed to do today in the popular songs.

In their naturally friendly way, they welcomed the "white gods," and paid these latter the compliment of adopting their customs. Missionaries (especially the Mormons, who brought them a Christ of the Western Hemisphere) found them most amenable to the suggestion that they turn in their native gods and tabus for a religion which supplanted fear with love.

Especially did the hymns of the Christian faith appeal to these lovers of song. The hymn book was really of more effect in winning the Hawaiians to Christianity than the prayer book or the Bible.

King Kamehameha I was first to unite the Islands under one rule. Many are the tales of his prowess and courage. He conquered everything in sight, and established a royalty which, under his namesake grandson and great-grandson was holding formal court in a palace equipped with the only throne in the United States.

The missionaries codified the native tongue into an alphabet and a system of writing, which they taught to the the Hawaiians. Both men and women

became well educated for that period. Eventually Honolulu became one of the most brilliant of the world's courts, and attracted royalty, nobility, and beribboned diplomats from everywhere to its social functions.

All this glitter was climaxed during the rule of King Kalakaua, who practically bankrupted the national treasury, and enabled the sugar barons to obtain a strangle hold on the government.

After 20 years of high living, Kalakaua died in San Francisco, and the Princess Liliuokalani, composer of the world-famed "Aloha Oe" was proclaimed queen. "Queen Lil" was a strong woman, determined and despotic, and struggled fiercely to regain control of the Islands.

But it was too late. American capitalists had the situation well in hand, and in 1893 she was overthrown. An independent republic was established which, in 1898, quietly annexed itself to the United States of America.

In 1900 the Islands were organized as a Territory, with a governor and secretary appointed by the President of the United States, and an elective territorial legislature. A popularly elected delegate is sent to the Congress of the United States of America at Washington, D. C. Citizens of Hawaii are full-fledged citizens of the United States.

It interested the writer particularly to learn that the first newspaper plant west of the Rocky Mountains was set up in Honolulu, and that Mark Twain once worked as a reporter on that sheet. Robert Louis Stevenson, who paid court to the reputedly beautiful Princess Kaiulani, also wrote in Honolulu, as did JACK LONDON.

## 'I Want to Learn To Speak Hawaiian'

Almost as much store is set by the aboriginal Hawaiian language as by the Hawaiian people on the part of white immigrants to these blessed shores. If you're going to call on any business men in the Islands, or if you have friends who have been living there for any time at all, there isn't much else to do but learn a smattering of this language, for Hawaiian words and phrases are sprinkled through nearly every conversation you hear in which one of the speakers lives on the Islands.

Right here and now, then, you shall get a short course in the Hawaiian tongue. Even if you never do go there, an hour's study of this sketchy compilation will help you sing those Hawaiian songs better.

There are five vowels and but seven consonants in the Hawaiian alphabet (as devised by the missionaries who reduced the language to writing), as follows: a, e, i, o, u—h, k, l, m, n, p, w. Each vowel is pronounced (double vowels, when sung, sound like a yodel), and syllables are never ended with a consonant.

Here are the vowel sounds and their English equivalents: a—ah; e—ay; i—ee; o—oh; u—oo.

Definitions you should know:

Aloha—hello, goodbye, love.  
Malihini—stranger, newcomer to the Islands.

Haole—white man.  
Kamaaina—old-timer, native, established resident of the Islands.

Kanaka—man.  
Wahine—girl.  
Keiki—child.  
Luau—feast.

Mele—Hawaiian music.  
Ae—yes.  
Aole—no.  
Hale—house.

Halekual—store.  
Hokele—hotel.  
Kapu—keep out, mustn't touch, tabu.

Kai—sea.  
Makai—good.  
Mokuahai—steamship.

Wikiwiki—hurry, make it snappy, shake a leg.  
Kaukau—food, place to eat.

Hana—work.  
Pake—Chinaman.  
Pupule—crazy, screwy.

Lolo—dumb, stupid.  
Akamai—smart, clever, quick-witted.  
Pilikia—trouble.

Nui—big, much, very, with all my heart.  
Mauna—mountain.

Make—dead.  
Ko—sugar.  
Ko-aki—sugar cane.

Kope—coffee.  
Pau—done, finished, there ain't no more.

Hapai—lift.  
Hiamoe—sleep.  
Huapala—sleep.

Huhu—angry.  
Lanai—porch.  
Makai—toward the sea.

Mauka—toward the mountains.  
Wai—water.  
Kulikuli—be still, shut up.

Kamailio—talk.  
Kokua—assist, help.  
La—sun, day.

Mahope—bye and bye, some day.  
Useful phrases:  
Ua lawa—stop, that's enough.

Maiki no—I'm feeling swell, how are you?  
Ano nawaliwali no—I feel terrible, I'm sick, got a hangover.

Mahalo a nui—thanks a million.  
Ae—you're welcome.  
Hele mai—come here.

Hoi mai—come back.

## Facts About Hawaii

Hawaii in 1935 turned into the U. S. Treasury a total of \$5,692,096 in federal income, liquor, and miscellaneous taxes.

Of that amount, \$4,253,875 was from income taxes alone, an increase of 29% compared with the \$3,287,591 collected in 1934.

Internal revenue department figures show that Hawaii led 17 states in federal tax collections during the year.

Cost of municipal government on the island of Oahu (on which the city of Honolulu is located), amounted to \$4,361,170 during 1935, an average of \$20 per person.

## On the Beach At Waikiki



Hawaii is becoming increasingly popular as a winter vacation spot, and no wonder. Here are a couple of examples of the beauties, native and American, to be seen on or near most any of the beaches.

This is \$8.70 per person less than the cost of municipal financing in 1930.

Municipal maintenance dollars were spent as follows: payroll, fire and police protection, courts, health, sanitation, highways, and lighting, 44 cents; charities, including Leahi Home, Palama Settlement, and the Social Service Bureau, 4 cents; materials, supplies, construction, and acquisition of property, 29 cents; old age pensions, 6 cents; interest on warrants and sinking fund requirements, 17 cents.

Small industries in Hawaii, especially coffee and other agricultural products, have had an interesting

growth in recent years. Here are some figures for last year:

Coffee: 8,790,000 lbs. of coffee were produced in Hawaii during 1935. Fifty-four per cent of this was shipped to the mainland, 24% to foreign lands, and 22% consumed locally. The 1935 coffee crop is valued at \$1,000,000.

Potatoes: Of a total crop of 1,082,000 lbs., 984,000 lbs. were shipped to the mainland, and 98,000 lbs. consumed locally. The crop was valued at \$50,000.

Honey: 1,500,000 lbs. were produced in 1935, for an estimated value of \$70,000.

Stock feed: An interesting feature of Hawaii's 1935 exports was pineapple stock feed. This showed an increase of 3,500,000 lbs. over 1934.

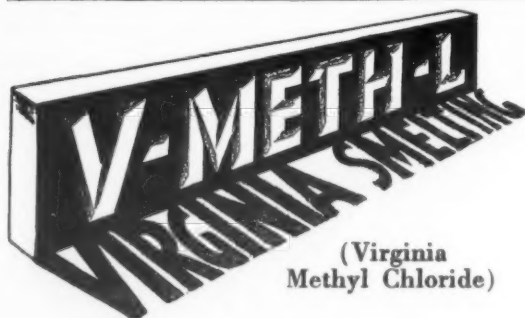
## Final Picture of George's Car



WHEN George sees this picture of his beloved Auburn speedster, he will probably break down and cry. George took an immoderate pride in that yellow car and claimed that it could pass anything on the road. Perhaps it could, if the other car was going in the same direction, but it got the worst of a mixup with a truck and a LaSalle on a sharp curve near Madera, Calif.

Although George was considered a

fast driver, he never had a serious accident, but soon after he had disposed of the car and sailed for Honolulu, it was in a crash. Bob Nixon, known to be an ultra-careful driver, was delivering the car when the accident occurred. He was thankful to emerge with only a gash across his forehead and a ruined suit of clothes. California state police decided that neither driver could be blamed for the collision.



Now  
5c less  
per pound!

Greatly increased volume plus improved methods of refining enable us to make a price reduction on V-METH-L of 5 cents a pound. This reduction effective as of April 1, 1936.

V-METH-L will provide sub-zero temperatures and still maintain above-atmospheric pressures. Any mechanical equipment will, therefore, do more freezing when charged with V-METH-L than with a refrigerant of high boiling point.

Furthermore, V-METH-L permits the use of flange-jointed tubing. Every service man knows that copper tubing is easier to handle and costs less than the welded-steel construction required for ammonia. V-METH-L, made by the makers of ESOTOOL. The coupon will bring interesting literature.



**VIRGINIA SMELTING CO.**  
WEST NORFOLK, VIRGINIA

F. A. Eustis, Sec'y, Virginia Smelting Co., 131 State St., Boston, Mass.  
Send me the literature I have checked. I am interested in receiving any additional literature on Electrical Refrigeration you may issue from time to time.  
☐ Folder: Extra Dry ESOTOOL (Liquid Sulphur Dioxide)  
☐ Folder: V-METH-L (Virginia Methyl Chloride)  
☐ Folder: Transferring from large to small cylinders  
Circular Physical properties of various refrigerants (Write name and address in margin)

Mail  
Coupon  
Now!

"AN OLD NAME IN A YOUNG INDUSTRY"

# CURTIS

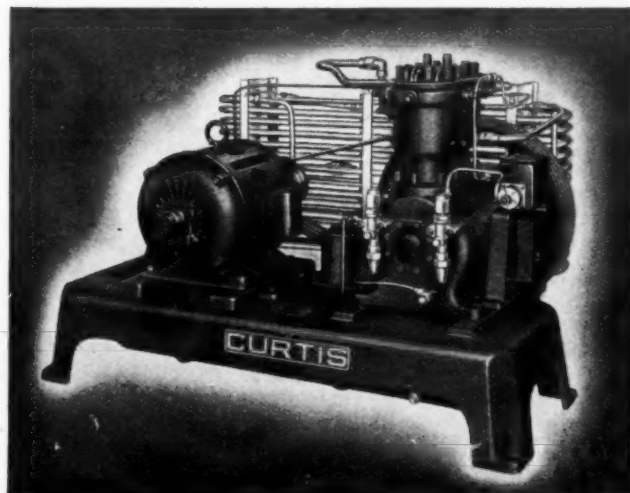
Specify CURTIS  
and be sure

## ELECTRIC REFRIGERATION AND AIR-CONDITIONING UNITS

The sure way to satisfaction from a refrigeration or air-conditioning installation is to be certain that its most vital part—the condensing unit—is built by Curtis. Their constant, trouble-free performance is the result of 42 years' specialized experience in building fine compressors.

Complete Line—65 Units • Extra Capacity • Slow Operating Speed • Experienced Design • Low Upkeep • Rugged Construction • Fine Materials and Workmanship

Curtis enjoys the highest capital and credit rating —a Curtis product won't become an "orphan".



## CURTIS

Curtis Refrigerating Machine Company  
Division of Curtis Manufacturing Co.  
1912 Kienlen Avenue — St. Louis, Mo.

In Canada:  
Canadian Curtis Refrigeration Co., Ltd.  
20 George St., Hamilton, Ont., Can.



## Mills Novelty Enters Commercial Field with New Compressor Line

(Concluded from Page 1, Column 4)  
expand its line and make it available for all types of commercial applications.

According to R. E. Polley, who heads Mills' commercial refrigeration division, a complete section of the factory here has been devoted to the new compressor manufacturing division, and approximately \$500,000 has been invested in specially-designed production machinery and equipment. The Mills compressor follows modern trends in design, and is featured by a large, balanced flywheel. Special attention has been given to the crankcase seal, with Mills engineers developing an assembly that can be removed as a complete unit in case removal was every necessary, thus eliminating the necessity of disassembling the compressor.

All bearings are diamond bored, and the cylinders are honed to close tolerances. Intake and discharge valves are both mounted into a cylinder-held head plate.

Connecting rods are drop-forged, bearing are of spun Babbitt, and the cylinder and crankcase are cast integral of high-grade iron especially developed for refrigeration compressors. Main bearings are of bronze.

Pressure lubrication is supplied to all bearings, included the wrist-pin bearing.

## Kelvinator Moves Smith to Detroit

DETROIT — Transfer of Sterling Smith, residence manager of Kelvinator Corp.'s national direct sales division at New York, to the headquarters office here has been announced by Edward R. Legg, manager of the division.

Mr. Smith has been with Kelvinator for the past 10 years. Prior to joining the national direct sales division, he was a commercial sales supervisor at the New York branch.

In his new position, Mr. Smith will contact national buyers of commercial electric refrigeration equipment, and refrigeration case and cooler manufacturers in the Middle West, as well as national buyers formerly handled from the New York office.

## Knoxville Distributor Is Named by Lipman

BELIOT, Wis.—Chapman Drug Co., of Knoxville, Tenn., has been appointed distributor for Lipman commercial refrigerator equipment by General Refrigeration Sales Co., reports D. G. Fifield, sales promotion manager.

The drug firm was a Lipman distributor several years ago, under the new franchise will have its old territory, which includes section of North Carolina, Kentucky, Tennessee, and Virginia.

Charles B. Carr, Toledo, has been given exclusive distributorship of Lipman ammonia equipment in the Toledo territory, Mr. Fifield also announced.

## New System for Freezing Peas Singly Developed

MT. VERNON, Wash.—To develop a quick freezing system for freezing peas singly, Bozeman Canning Co., working with engineers from Seattle branch of York Ice Machinery Corp., evolved a low-temperature wind tunnel system similar to that used by ice cream and chocolate manufacturers.

The Bozeman plant employs two 52-ft. slow-moving endless belts, turning in opposite directions, one above the other. They are staggered slightly so that the peas travel over in one direction, and drop down from the end of the upper belt to the lower one, which returns them to the starting point in a frozen condition. The belts are of perforated wire mesh (supplied by Link Belt Co.), so the blast of the sub-zero air can pass through.

The air is cooled by a bunker with 15,000 ft. of ammonia pipe coils. A fan draws 40,000 c.f.m. of air through the coils and forces it at a low temperature into ducts, which discharge through a large number of dampered outlets along the lower belt.

## Super-Cold System on Boat Stumps Tropic Heat

FORT MILLS, P. I.—Heat as high as 125° and intense humidity hasn't caused any trouble for the Super-Cold refrigeration system installed in the U. S. Mine Laver, "Col. Geo. F. E. Harrison," now stationed in Asiatic waters, reports Albert Rebel, Super-Cold representative.

## Geo. Belsey Sells Modern Refrigeration Equipment to California Super-Markets By Proving Its Value

(Concluded from Page 1, Column 2)

ed that there would be no improvement until some of the lessees became strong enough to dictate to the land owners. Operators in a number of super markets have now achieved that position.

Originally the refrigeration for a super market consists of one ammonia plant of approximately 5 to 10 hp. with a complete hook-up of every case and every box in the market on one machine. This gave no flexibility between departments. If the meat box was too cold, other cases might be too warm. If the delicatessen owner had plenty of refrigeration, the vegetable man would be without it.

### Food Losses Were Excessive

Food losses resulting when the whole system had to be shut down at one time for defrosting. Excessive trimming losses and shrinkage for all the merchants also developed because, with frosted coils in all of the equipment, the air was very dry in spite of the low temperatures.

Young's Market Co., owners of a chain of Thriftmart super markets in the metropolitan area of Los Angeles, bought the first G-E installation, which was used for the mart located at Sunset and Laurel Sts. in Hollywood. Later, Young's bought another for the new market in Leimert Park, a Los Angeles residential district.

### Individual Units Used

Conditioned-air refrigeration was installed in all of the walk-in boxes, which included the meat, vegetable, and delicatessen coolers and the grocery box. Since all of these operated at different peaks and different temperatures, Mr. Chamberlin advised individual machines for each operation. The same type of installation was made in the display cases, each case having its own individual unit operating on a defrosting cycle.

Power meters on each machine also enable tenants to have their own power meters; so that each operator pays only for the power he uses.

By specifying G-E equipment in a signed lease, operators of Villamart in Westwood, a town just outside of Los Angeles, and of Wilshirmart, in Beverly Hills, recently secured complete installations.

Fixture companies, watching developments, are now interested in cooperating with General Electric in selling completely conditioned markets, G-E officials say.

Although the original cost of a complete market is approximately 25 to 30% higher than the old ammonia system, G-E claims that it has so completely antiquated the old system that competition is forced to bid on a competitive type of installation.

### How Equipment Lines Up

Average equipment included in a standard super market consists of a 2 hp. air-cooled machine for the meat cooler, together with an EC18 conditioned air chilling unit. Usually, Mr. Chamberlin says, the 50 or 60 ft. of meat cases take a 1½ or 2 hp. individual machine, particularly if the standard single glass case construction with frosted Freon coils is used.

The delicatessen department uses the same size unit in its walk-in coolers. Combination storage and reach-in box with conditioned air, also with a machine of approximately 1½ or 2 hp. is used for the grocery department.

All of these machines are assembled in one machine room making the installation compact and service comparatively easy, according to Mr. Chamberlin.

Wide publicity accorded the California markets has already resulted in increased commercial sales for his company, Mr. Chamberlin maintains.

## Prospects on a Wholesale Basis



George Belsey Co., Los Angeles G-E distributor, has found a wide field for commercial sales among the city's "super markets." Here are two typical installations, the top in the Thriftmart market operated by Young's Market Co., and the lower is another market owned by the company.

## Southwest Dairy Products Buys Refrigerated Truck

DALLAS—To combat Texas heat in ice cream distribution, Southwest Dairy Products, of this city, recently purchased a refrigerated ice cream truck, with a 500 gallon capacity.

Storage compartment of the truck is refrigerated with Kold-Hold units, and insulated with seven inches of Dry-Zero blanket in the roof, six inches of this insulating material on the walls, and a cork floor six inches deep.

## Super-Cold Equips Dairy in Manila

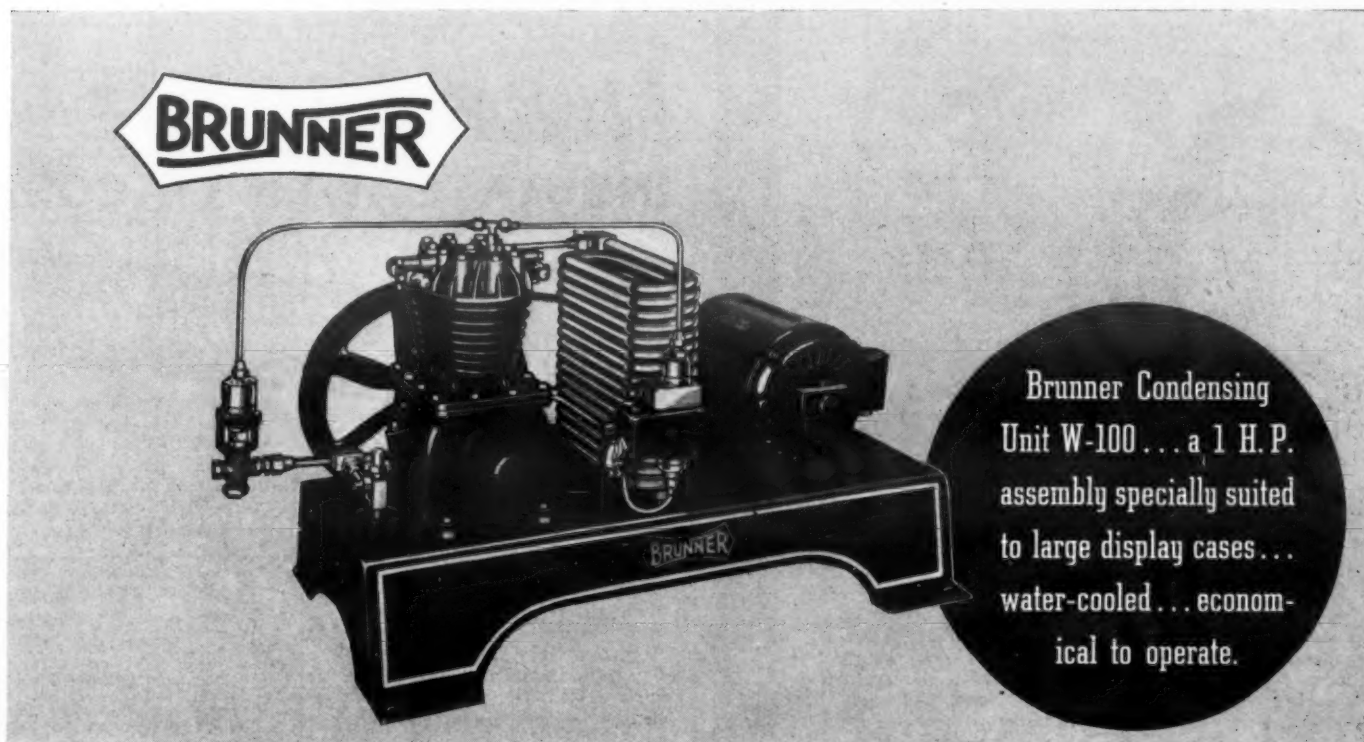
ILOILO, P. I.—One of the first of the Filipinos to start business with the beginning of the Philippine commonwealth, is Juan Ledesma, who has opened a modern dairy near here and equipped it with Super-Cold commercial refrigeration.

Heacock Co., Manila distributor, claims more Super-Cold commercial installations during the past year than all other makes combined.

## "I WASN'T LOOKING FOR *Pinch-Penny* ECONOMY"

★ A good many owners of Brunner Refrigeration Units express downright enthusiasm at the economy—the noticeable economy—of this equipment over previous installations. Buying Brunner primarily for dependability, they receive as a premium, refrigeration at lower cost. ★ ★ ★ Brunner economy is like that:—the by-product of a construction which combines strength and endurance, with a new kind of smooth efficiency. The practical results are reduced power bills... a minimum of adjustments and repairs and

delays... prolonged usefulness... and all the while 100% effective refrigeration. ★ ★ ★ Go carefully through the points of interest of the Brunner line—the vibrationless operation... the compact assembly... the "flex leaf" valves... dependable controls. Every detail typifies Brunner Quality... Forty-one condensing units, eight compressor models; air and water cooled; electric motor or gas engine driven; in a range from 1/6 H.P. to 15 H.P. Full particulars on request. Brunner Manufacturing Co., Utica, N. Y., U. S. A.



Brunner Condensing Unit W-100... a 1 H. P. assembly specially suited to large display cases... water-cooled... economical to operate.

**BRUNNER CONDENSING UNITS and COMPRESSORS**



## Commercial Uses

### Commercial Sales Set New Records for First Two Months of Year

(Concluded from Page 1, Column 5) of these latter sales had been made only to Refrigerating Machinery Association.

Condensing units to and including 25-hp. are covered in the report. It is assumed that most of these larger units were for use in large-size air-conditioning installations.

Total United States sales of air conditioners during the two months were 355 units, only 41 of these being self-contained. The others, of floor, ceiling, and residential types, were shipped without high sides. World sales during the period totaled 471 units.

The beverage cooler branch of the commercial refrigeration industry was another to show a relatively strong gain for the first two months of the year. Sales of complete beverage coolers, for January and February of this year, totaled 1,902, a gain of 513 over all beverage cooler sales, both complete and remote, for the same period in 1935, which totaled 1,389.

Companies whose sales figures are included in the January-February report are:

Brunner Mfg. Co., Carrier Engineering Corp., Crosley Radio Corp., Frigidaire Corp., General Electric Co., Gibson Electric Refrigerator Corp., Kelvinator Corp., Leonard Refrigerator Co., Merchant & Evans Co., Norge Corp., Servel, Inc., Uniflow Mfg. Co., Universal Cooler Corp., Westinghouse Electric & Mfg. Co., and York Ice Machinery Corp.

A complete tabulation of commercial and air conditioning sales figures appears on this page.

### Bridgeport Brass Forms Thermostat Division

BRIDGEPORT, Conn.—The thermostat and bellows division of the Bridgeport Brass Co. has been transferred to the Bridgeport Thermostat Co., a new \$750,000 corporation formed under the laws of Delaware, which will continue the manufacture of temperature control devices for electric refrigeration equipment.

Operations are now being carried on in the brass company plant as heretofore, but negotiations are under way for acquisition of a factory building in Bridgeport to which the division will be transferred. About 500 men will be shifted to the new plant as soon as it is acquired. William F. MacDonald, chief engineer, and W. J. Von Harten, assistant treasurer, will head a new corporation.

### New Ice Cream Cabinet Introduced by Kelvinator

DETROIT—Especially designed to serve ice cream manufacturers' own outlets, a new 12-hole self-contained ice cream cabinet has been introduced by Kelvinator Corp., reports Edward R. Legg, manager of the national direct sales division.

Features of the new cabinets as claimed by Mr. Legg are:

Low first cost and large capacity without undue overall size. Special oblong sleeves provide maximum storage space for package ice cream, bulk ice cream in cans and frozen novelties.

The enclosed ½-hp. condensing unit is attached to the end of the cabinet, thus affording portability; however, it may be detached and remotely installed if desired.

The new 12-hole Kelvinator ice cream cabinet is finished in white, with stainless steel top and individual black lids. Panels are spot welded, eliminating bolts and end corner strips. Cork insulation is used. Refrigerant control is by a high side float system.

"These new cabinets are ideal for use in temporary retail ice cream stores or for permanent installation in the manufacturers' own dairy stores," Mr. Legg stated. "The equipment is easy to install and may be moved readily to other locations at any time. Cabinet may be moved into a store on a truck and made ready for service with a minimum of labor."

"The deluxe year-round dairy stores of ice cream manufacturers need the peak capacity provided by these new 12-hole cabinets just as much as do the 'double-dip' summer outlets."

### Bastian-Blessing Erects Addition to Factory

GRAND HAVEN, Mich.—Bastian-Blessing Co., soda fountain and ice cream freezer manufacturer, with offices in Chicago, recently let contract for a 30,000 sq. ft. addition to its plant here at a cost of approximately \$45,000.

In New York City, the company has leased a 20,000 sq. ft. showroom where a complete line of its products is being shown.

### Counter Freezer Sale Set Records for Mills Co.

CHICAGO—Exceeding the usual hot weather peak in July, sales of counter-type ice cream freezers by the Mills Novelty Co. reached a new high in January, which was in turn surpassed by a 15% increase in February, shortest months of the year, reports James Mangan, advertising manager.

## 7,438 Commercial Condensing Units Sold in January, 1936 by 15 Manufacturers; Conditioner Sales Also Reported

The following reports of commercial refrigerating and air-conditioning equipment sales for January and February, 1936, were made to the Commercial Refrigeration Section of the Refrigeration Division of the National Electrical Manufacturers

Association (Nema) by the following 15 companies: Brunner Manufacturing Co., Carrier Engineering Corp., Crosley Radio Corp., Frigidaire Corp., General Electric Co., Gibson Electric Refrigeration Corp., Kelvin-

ator Corp., Leonard Refrigerator Co., Merchant & Evans Co., Norge Corp., Servel, Inc., Uniflow Manufacturing Co., Universal Cooler Corp., Westinghouse Electric & Manufacturing Co., York Ice Machinery Corp.

SALES FOR JANUARY, 1936									
COMMERCIAL	Domestic		Canadian		Other Foreign		Total		World
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
1. Bottle Water Coolers—Complete.....	109	\$ 8,807	1	\$ 106	2*	\$ 146*	108	\$ 8,767	
2. Pressure Water Coolers—Complete.....	264	26,624	.....	.....	25	2,236	289	28,860	
3. Water Coolers—Low Side Only.....	29	2,296	.....	.....	.....	.....	29	2,296	
4. Ice Cream Cabinets—Complete.....	94	10,079	34	3,382	25	2,124	153	15,585	
5. Ice Cream Holding Cab. Only (Remote).....	128	18,073	6	744	14	1,897	148	20,714	
6. Bottled Beverage Coolers—Complete.....	526	36,482	.....	.....	7	688	533	37,170	
7. Milk Cooling Cabinets (No High Sides).....	72	5,366	.....	.....	2	157	74	5,523	
8. Air Conditioners—Self-Contained.....	13	2,914	.....	.....	21	5,089	34	8,003	
9. Air Conditioners—Floor Type (No High Sides).....	53	22,740	.....	.....	21	5,498	74	28,238	
10. Air Conditioners—Ceiling (Cooling Only—No High Sides).....	113	14,521	.....	.....	35	4,190	148	18,711	
11. Air Conditioners—Ceiling Type (Equipped for Heating—No High Sides).....	11	6,377	.....	.....	3	1,920	14	8,297	
12. Air Conditioners—Residential Type (No High Sides, Boilers, or Furnaces).....	8	3,988	.....	.....	.....	.....	8	3,988	
13. Condensing Units Less Than ½ Hp.....	726	38,329	3	186	113	7,193	842	45,708	
14. Condensing Units—½ Hp.....	1,080	76,337	22	1,848	244	18,880	1,346	97,065	
15. Condensing Units—¾ Hp.....	559	54,976	23	2,507	899	96,763	1,481	154,248	
16. Condensing Units—1 Hp.....	524	67,338	12	1,447	74	9,607	610	78,392	
17. Condensing Units—1½ Hp.....	574	86,122	4	740	495	81,170	1,073	168,032	
18. Condensing Units—2 Hp.....	213	41,017	3	616	67	12,519	283	54,152	
19. Condensing Units—3 Hp.....	81	17,136	1	300	35	8,591	117	44,318	
20. Condensing Units—5 Hp.....	109	31,428	1	286	7	2,029	117	33,743	
21. Condensing Units—7½ Hp.....	70	31,818	.....	.....	58	12,500	128	44,318	
22. Condensing Units—10 Hp.....	74	37,947	.....	.....	3	1,560	77	39,508	
23. Condensing Units—15 Hp.....	60	40,720	.....	.....	9	5,119	69	45,839	
24. Condensing Units—20 Hp.....	108	84,312	3	1,014	8	6,380	119	91,706	
25. Condensing Units—25 Hp.....	23	23,025	.....	.....	.....	.....	23	23,025	
26. Condensing Units—30 Hp.....	36	40,062	.....	.....	.....	.....	36	40,062	
27. Total Lines 13 to 26 Inclusive.....	4,237	.....	72	.....	2,012	.....	6,321	.....	
28. Total Lines 1, 2, 4, 6, 8, and 27.....	5,243	.....	107	.....	2,088	.....	7,438	.....	
29. Commercial Evaporators (Not Reported Above).....	2,162	53,113	103	3,270	697	20,139	2,962	76,522	
30. Air-Conditioning Evaporators (Not Reported Above).....	43	13,337	.....	.....	29	15,741	72	29,078	
31. Total Commercial & Air Conditioning.....	.....	\$895,285	.....	\$16,446	.....	\$321,846	.....	\$1,233,577	

\*Indicated in report as to be subtracted from totals.

## February Sales of Commercial Condensing Units Total 9,912

SALES FOR FEBRUARY, 1936									
COMMERCIAL	Domestic		Canadian		Other Foreign		Total		World
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
1. Bottle Water Coolers—Complete.....	75	\$ 6,995	3	\$ 273	28	\$ 2,465	106	\$ 9,733	
2. Pressure Water Coolers—Complete.....	493	52,287	2	223	66	7,623	561	60,133	
3. Water Coolers—Low Side Only.....	34	1,849	2	93	7	453	43	2,395	
4. Ice Cream Cabinets—Complete.....	402	50,033	35	3,375	65	7,025	502	60,433	
5. Ice Cream Holding Cab. Only (Remote).....	266	35,284	8	750	61	8,358	335	44,392	
6. Bottled Beverage Coolers—Complete.....	1,376	101,659	.....	.....	44	3,401	1,420	105,060	
7. Milk Cooling Cabinets (No High Sides).....	115	8,249	.....	.....	117	1,088	232	9,337	
8. Air Conditioners—Self-Contained.....	28	6,568	.....	.....	3	910	31	7,478	
9. Air Conditioners—Floor Type (No High Sides).....	57	24,577	.....	.....	15	7,375	72	31,952	
10. Air Conditioners—Ceiling (Cooling Only—No High Sides).....	56	7,233	.....	.....	13	1,394	69	8,627	
11. Air Conditioners—Ceiling Type (Equipped for Heating—No High Sides).....	15	8,320	.....	.....	5	3,200	20	11,520	
12. Air Conditioners—Residential Type (No High Sides, Boilers, or Furnaces).....	1	600	.....	.....	.....	.....	1	600	
13. Condensing Units Less Than ½ Hp.....	1,372	72,015	.....	.....	469	20,555	1,841	92,570	
14. Condensing Units—½ Hp.....	1,152	77,135	13	1,133	484	35,521	1,649	113,789	
15. Condensing Units—¾ Hp.....	1,005	93,725	58	5,847	306	30,269	1,369	129,841	
16. Condensing Units—1 Hp.....	633	77,468	11	1,391	162	20,022	806	98,881	
17. Condensing Units—1½ Hp.....	657	95,849	18	3,454	95	14,373	770	113,676	
18. Condensing Units—2 Hp.....	328	62,509	5	893	43	8,120	376	71,522	
19. Condensing Units—3 Hp.....	143	30,718	3	331	24	5,154	170	36,203	
20. Condensing Units—5 Hp.....	85	19,139	2	344	37	9,813	124	29,296	
21. Condensing Units—7½ Hp.....	35	13,861	2	897	4	2,050	41	16,808	
22. Condensing Units—10 Hp.....	26	14,641	.....	.....	4	2,112	30	16,753	
23. Condensing Units—15 Hp.....	23	29,317	.....	.....	11	7,978	54	37,295	
24. Condensing Units—20 Hp.....	23	20,381	.....	.....	1	276	24	20,657	
25. Condensing Units—25 Hp.....	15	16,712	.....	.....	2	2,376	17	19,088	
26. Condensing Units—30 Hp.....	21	24,422	.....	.....	.....	.....	21	24,422	
27. Total Lines 13 to 26 Inclusive.....	5,538	.....	112	.....	1,642	.....	7,292	.....	
28. Total Lines 1, 2, 4, 6, 8, and 27.....	7,912	.....	152	.....	1,848	.....	9,912	.....	
29. Commercial Evaporators (Not Reported Above).....	1,988	54,034	129	4,203	848	22,986	2,965	81,223	
30. Air-Conditioning Evaporators (Not Reported Above).....	59	17,302	.....	.....	15	10,500	74	27,802	
31. Total Commercial & Air Conditioning.....	.....	\$1,022,882	.....	\$23,207	.....	\$235,397	.....	\$1,281,486	

## Leading Makers of Commercial Refrigerators INSULATE WITH LK CORKBOARD

Anheuser-Busch is one of them!

IT'S not without reason that the manufacturers of so many popular display cases, beer coolers, ice cream cabinets, etc. standardize on Armstrong's LK Corkboard Insulation. They've found that nothing is more important to a buyer of refrigerated equipment than performance. They've found, too, that LK Corkboard Insulation helps them to build into their refrigerators the continued efficiency and lasting operating economy that customers want!

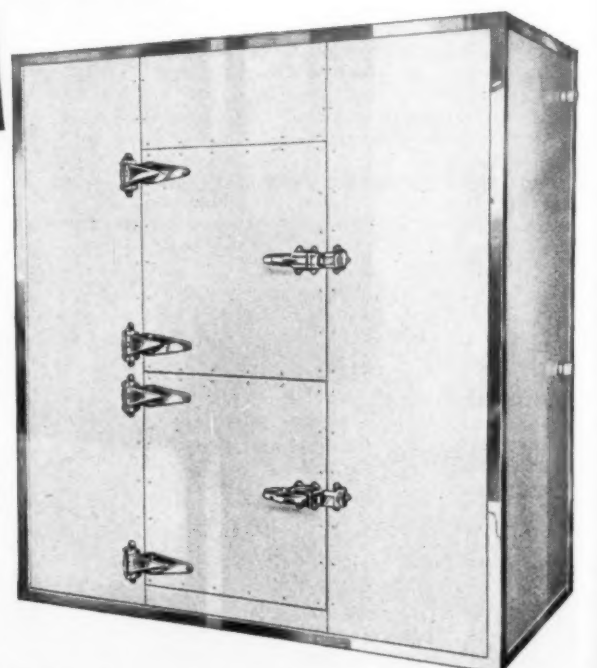
Armstrong's LK Corkboard was especially developed to meet the requirements of commercial refrigerated equipment. It is moisture-resistant and rigid . . . cannot settle and pack. It is extra light in

weight and structurally strong. And new large-sized boards (up to 36" x 36") make installation easy and economical.

#### For Refrigeration Contractors

For the convenience of refrigeration contractors, stocks of Armstrong's Corkboard and Sundries are conveniently located in principal cities. Armstrong's complete line of Insulation Sundries aids efficient installation and finishing. Ask for the pamphlet "Armstrong's Insulation Sundries."

Armstrong Cork Products Company, Building Materials Division, 924 Concord St., Lancaster, Pennsylvania.



## Armstrong's LK CORKBOARD

An Anheuser-Busch commercial refrigerator insulated with Armstrong's LK Corkboard. This is a 110-gallon storage cabinet, with walls, floor, and top of 4" Corkboard. It is designed to maintain a temperature of from zero to -5° F.



INSTITUTION and school cafeterias have found Copeland Commercial Refrigeration to be both dependable and economical—dependable in preventing food spoilage, and economical to operate and maintain. Where great numbers of people must be served daily, an immense amount of perishable foodstuffs must be safeguarded against costly waste, and many operators find Copeland's superior performance is insurance against such loss. A few Copeland franchises are available to those who can qualify. Write, or wire, for details.

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Manufacturers of a complete line of Household and Commercial Refrigeration  
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**Copeland**  
DEPENDABLE Electric REFRIGERATION



## Kelvinator Develops Complete Sales Plan to Aid Beverage Cooler Dealers

DETROIT—Kelvinator Corp. has worked out a sales plan on beverage coolers, designed to assist dealers in reaching a larger market with the line of coolers which the company has on the market for this year.

The plan covers display, training, and equipping salesmen, time payment sales, securing local bottlers' cooperation, and effective use of advertising. A simple method for obtaining prospects, arousing interest, and closing sales is also outlined.

Kelvinator's line of beverage coolers for this year has been given modernistic styling and a number of convenience features. Two models are available—the first with a capacity of 150 six-ounce or 136 12-ounce bottles, and the second with a capacity of 96 six-ounce or 72 12-ounce bottles.

### 1/4-Hp. Condensing Unit

The cabinet, of 22-gauge steel on sides and ends and 16-gauge on the base, has a wrap-around shell, eliminating rough edges, and is regularly finished in bright red enamel, with black top and base, chromium beading on the shell and polished stainless steel moulding.

Kelvinator's standard 1/4-hp. condensing unit is used to power the unit. Standard equipment, a roll top which glides back and forth on rollers and fits flush, may be supplemented by the either a coin vending top, or water coils and bubbler, with glass filler, for conversion to a water cooler. On carload lots, green or white exterior finish is also available.

The promotion plan back of the coolers is designed to encourage volume selling. Beverage coolers, it is pointed out, are "package" merchandise, as easily installed as an electric refrigerator.

### Dealers Urged to Display Units

First of all, the dealer is being encouraged to display at least one model of each of the coolers on his display floor, where prospects may have a chance to look at them.

Best results will be obtained, it is pointed out, by the setting up of a separate selling organization on beverage coolers—one large enough to allow quick, complete coverage of the community.

Kelvinator dealers who have put this plan into effect have found that best results are obtained by efficient direction of newly trained men. Supervisors, selected from the existing selling organization, is advised, one for every 10 salesmen. Experienced commercial refrigeration salesmen are best fitted for this work, it has been found.

### Training School Suggested

Training and equipment suggested includes a one or two-day training school, to give salesmen a groundwork in beverage cooler selling, using the company's new beverage cooler sales manual. Standard sales equipment suggested includes the sales manual, beverage cooler literature for presenting the cooler and the meter-ator

sales plan, a carpenter's rule for making installation measurements, and a regular thermometer.

Two selling plans are outlined: the meter-ator plan and the standard sales finance plan. The first features payments as low as 25 cents a day, the second a 10% down payment, with 24 months to pay the balance.

### Local Cooperation Important

Cooperation of local bottlers is important in aiding sales. This, it is suggested, may be accomplished in several ways: offering to sell to his customers without responsibility to him; presentation of the cooler's features to drivers; and giving the drivers literature for distribution to their customer-prospects. Displays at bottlers' conventions is advocated as another sales-building move.

Mats of beverage cooler advertisements are available to dealers for use in local newspaper campaigns.

Methods advocated for obtaining prospects include canvassing, use of bottles, customer lists in direct mail advertising, and displays at bottlers' exhibits and conventions.

To aid in arousing prospect interest, Kelvinator has prepared two pieces of sales literature—a presentation folder, explaining the increased business and profits which a beverage cooler makes possible; and a folder describing the meter-ator selling plan, explaining how the merchant can buy his cooler by the same method he uses in buying ice. These folders may be used either as handouts or as direct mail pieces.

### Closing Sales Points

In closing the sale, the following points are suggested:

1. Sell the prospect on mechanical beverage cooling—its convenience, cleanliness, and efficiency.
2. Sell him on the individual beverage cooler.
3. Explain how it will pay for itself in savings alone.
4. Stress stability of the company behind the product.
5. Tell how the meter-ice plan permits him to buy the cooler with the daily amount he formerly spent for ice.

Importance of bringing the prospect into the showroom for an actual demonstration of the cooler's ability is stressed. The whole sales theme, however, is built around the "profit" story—how the cooler will result in satisfied customers, more sales, and more profits.

After the sale has been closed and delivery made, the salesman is advised to call back on the new owner, asking his permission to place an installation sign near the cooler. This will direct the attention of store visitors to the new equipment, arouse interest, and stimulate business for the merchant. Sales leads picked up by the merchant, it is suggested, should be the salesman, who should pay the merchant a small commission on sales made by this mean.

## Temprite Warns Users On Dangers of Freezing Water in Cooler Coils

DETROIT—Warning against the danger of freezing of water in the coils of water cooling equipment where the exit temperature is extraordinarily low, is sounded in "Bulletin No. 5" just issued by Temprite Products Corp.

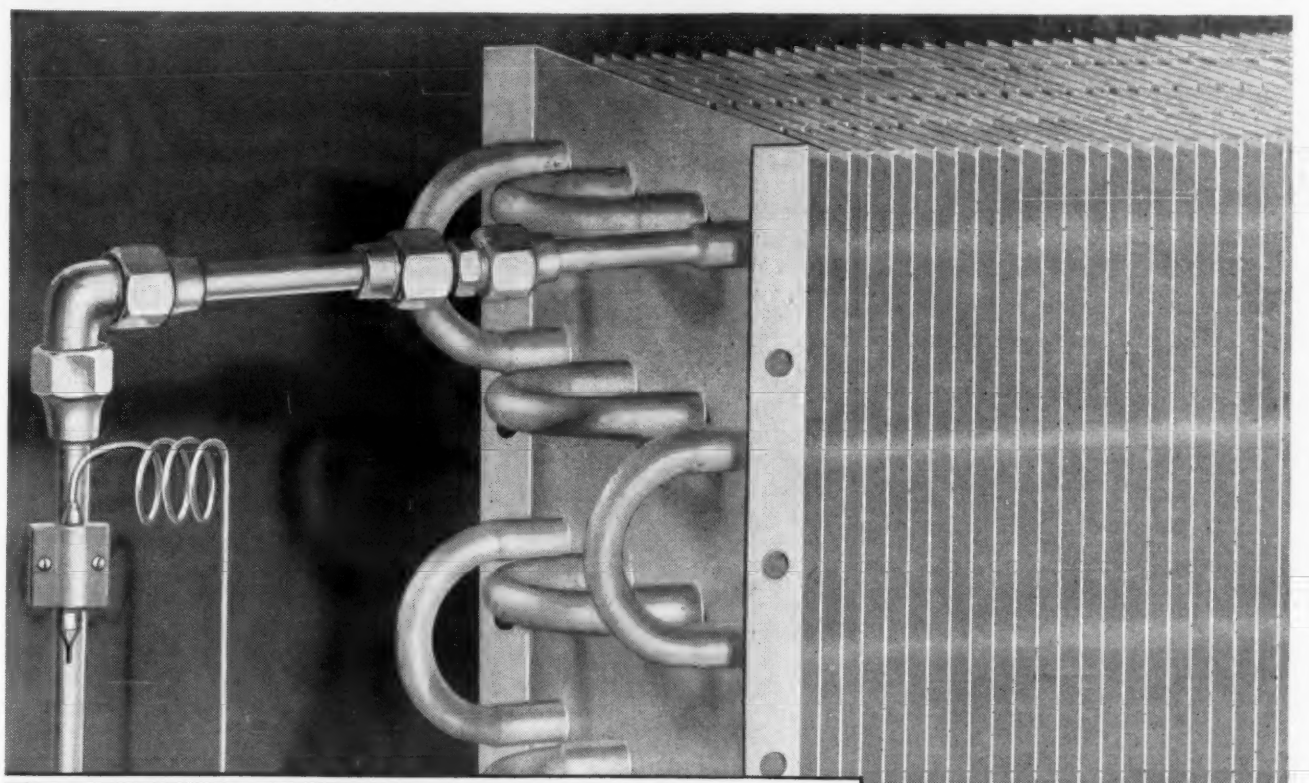
Temprite coolers, the bulletin points out, may be set to produce any desired exit temperature, but in the case of water coolers, if the exit temperature be too low, freezing of water within the cooling coils will result. Temprite guards against this by setting the coolers at the factory so that the low guards against this by setting the coolers at the factory so that the lowest normal load conditions.

When beverages or other liquid having freezing points lower than that of water are to be cooled, it is of course possible to set the control valve to permit exit temperatures lower than 39° F.

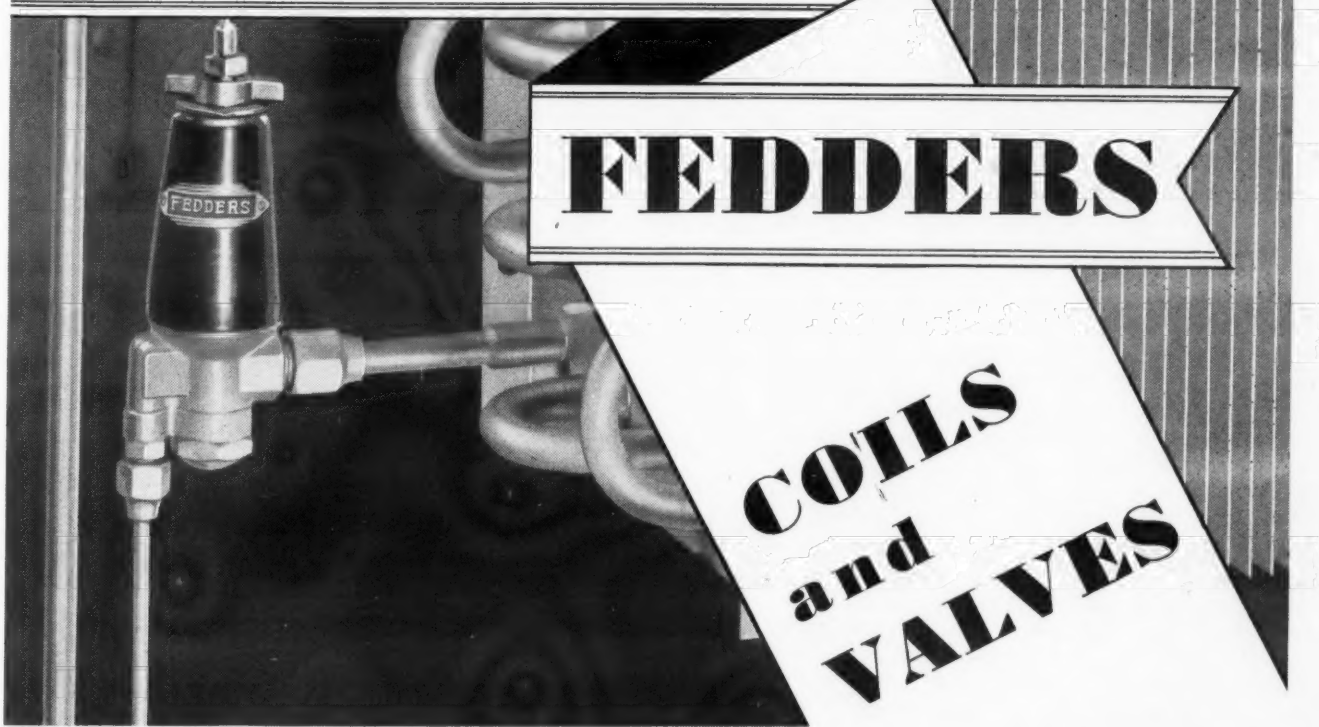
The bulletin points out, however, that it must be remembered that beer coils frequently are cleaned by having water forced through them, and also that many dispensers follow the practice of allowing water to stand in their coils overnight or at other times when beer is not being drawn through them.

Water will freeze in the cooler under these conditions if low temperature settings are used, says the bulletin.

Danger from freezing during the cleaning process can be eliminated by stopping the compressor while cleaning is in progress. There is no means, however, of preventing freezing in a low temperature cooler if one coils is filled with water and the other still used for beer cooling.



## For Every Application—



# FEDDERS

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## FOUR COMPLETE LINES of

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- Flat Fin
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- Model 33 Thermostatic
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- Constant Pressure Check
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Every prospect is *your prospect* when you take advantage of Fedders complete line of complete Low Sides. Built in thousands of models, you get the correct size, type and capacity to fit every application EXACTLY.

Standardize on Fedders complete line . . . sold on a package basis . . . for use with all refrigerants . . . prompt delivery from Fedders branches and jobbers everywhere for convenience in ordering, installation, synchronized performance and reduction of duplication in inventory investment.

**CLEANED AND DEHYDRATED —ABSOLUTELY!**



Photograph shows electric ovens for dehydrating Fedders products at 220° F., and 28 inches vacuum.

Yes - -

Mr. Refrigeration Man

Years of experience have proved the necessity for DRYNESS on the inside of Refrigeration Units. It is another EXTRA VALUE you get with Fedders Products.

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**PRODUCTS**

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DOMESTIC EVAPORATORS

CONDENSERS

METIFLEX ICE TRAYS

SPIRAL FINNED TUBING

AIR CONDITIONING SURFACE

MCCORD RADIATOR & MFG. CO.-DETROIT



## ELECTRIC REFRIGERATION NEWS

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VOL. 17, No. 15, SERIAL No. 368  
APRIL 8, 1936

## Commercial Hits the Comeback Trail

COMMERCIAL refrigeration business is getting good again. Record smashing sales gains in the household electric refrigerator industry have been repeated month after month until they can hardly be classified as news. Sales of commercial refrigeration equipment, however, have followed no such course—until very recently, no gains of any consequence had been reported since the pre-depression years.

There is some real news, however, in the sales of commercial refrigeration equipment (as reported to the Commercial Refrigeration Section of the Refrigeration Division of National Electrical Manufacturers Association) for the first two months of 1936.

January sales of commercial high sides totaling 7,438 units were the best for that month since 1929, while February sales of 9,912 units represent the highest in February sales since 1930. Some critics may claim these increases are due to the fact that there are more companies reporting figures now than in those years, but in answer to this it can be pointed out that many companies now reporting sales were not making equipment back in those years, so that a substantial increase really has been shown.

## Gains Shown in Several Divisions of the Market

More encouraging, perhaps, than the gain in total number of unit sales is the pickup in several divisions of the commercial market, notably in the ice cream cabinet and beverage cooler fields.

Gains have no doubt been registered in other divisions of the market, but these two are singled out because reports are specifically made on sales of these two types of equipment; and, because they have a special significance in terms of the commercial market.

Ice cream cabinets are significant in that they represent one of the very oldest markets for commercial refrigeration equipment. Skyrocketing sales of ice cream cabinets brought prosperity to the commercial refrigeration industry in the late twenties, and the tremendous slump in sales of this particular item (from 47,000 in 1930 to 8,000 in 1934) was a contributing factor to the depression that hit commercial in the early thirties.

Once again, however, the ice cream cabinet market appears to be on the upgrade (compare Nema sales of 402 cabinets in February

of this year, with the 79 sold in February, 1934). While it is true that the market has improved, much of the credit for the increased sales is due to the manufacturers for the refinements and new designs which have been evolved in equipment for ice cream serving establishments. Such advances in product design have not only filled certain needs in the field, but have also served to hasten the obsolescence of old equipment.

Bottled beverage cooler sales are significant in that they are representative of a new division of the commercial market. The bottled beverage cooler is not new in the sense that it is a new "discovery," but it might be called a virgin application in terms of the progress that has been made in sales of this item.

## Beverage Cooler Sales Start with a Bang

This year, however, bottled beverage cooler sales are starting off with a bang, as witness Nema sales of 1,376 such units for February, as compared with 113 units in February two years ago.

Other divisions of the commercial market are presenting increased sales possibilities—widening use of the highways as a means for the transportation of perishable foods is bringing more refrigerated truck applications; tightening of state and city ordinances and the jump in farm income put farm milk cooling into the spotlight; counter-type ice cream freezers are having a phenomenal growth.

It is possible that some readers may be inclined to comment along this line:

"Yes, I've heard all of this before, but boy, I was in the commercial refrigeration business back in 1932 when they were yanking units out of places faster than they were putting 'em in, and I learned a lesson I'll never forget."

To readers with such sentiments we invite their consideration of the following thought.

## Failure in Early 30's Due To Inopportune Timing

Isn't it likely that concentrated sales efforts on commercial refrigeration in the early 1930's were unprofitable because the efforts were poorly timed in relation to the market, rather than because of anything inherently wrong with commercial refrigeration? The depression was at its height in those years, and the small merchants—who were the principal prospects for commercial refrigeration—were the hardest hit.

Conversely, as Recovery swings underway, the retail merchant benefits first, the time becomes portentous for an attack on the commercial refrigeration market. Sales figures indicate that the offensive is already underway.

What are some of the other reasons why commercial refrigeration should hold an appeal for an aggressive and progressive dealer or distributor? One reason is that many distributors and dealers of both household and commercial lines will tell you, off the record, that commercial refrigeration has been their bread and butter because of its high unit sale price.

Another good reason is the fact that the market is not limited to a single type of application; it has possibilities limited only by the scope of the salesman's imagination and aggressiveness.

## Commercial Dealer Must Know 'Specialty Selling'

Commercial refrigeration pays dividends to the man who knows—and uses—"specialty selling" methods. Says J. A. "Doc" Harlan, head of Kelvinator's commercial sales division, anent this subject:

"Commercial refrigeration selling is the only phase of the refrigeration industry in which 'specialty selling' in the true sense of the word is employed, because the commercial refrigeration salesman 'sells' performance, that intangible which the system will produce for the purchaser. In buying a household refrigerator, the prospect 'selects' a piece of 'merchandise,' but the commercial refrigeration salesman 'sells' the prospect 'performance.'"

There is another reason why commercial refrigeration now presents special opportunities for the wide-awake dealer. It is the training ground for air-conditioning engineering, sales, and installations—because the same engineering and selling methods will be employed—and the dealer who has the commercial refrigeration background will have the jump on the field as the huge air-conditioning market opens up.

## Letters

### Addenda to the Wisconsin Test Reports

Electrical Standards Laboratory  
The University of Wisconsin  
College of Mechanics and Engineering  
Madison, Wis.

April 3, 1936.

Editor:

Kindly publish the following corrections to the article on refrigerator performance which appeared in your March 25 issue:

(1) In Table I the insulation for refrigerator No. 3 should have been given as "Dry-Zero and Aluminum Foil."

(2) Table I should have this footnote for the material column: "Based on information obtained from dealers, service men, advertising or partial inspection."

(3) The second paragraph on page 16 and the first sentences in the third and fourth paragraphs should have read as follows: "There appears to be a relation in Table III between maintenance of efficiency and the increase in weight of the refrigerators and the rate of frost accumulation on the evaporators."

"In order to ascertain how rapidly the water and moisture might evaporate under very favorable conditions, etc..."

"In normal service, the moisture would never have even this opportunity for evaporating."

Let your proofreaders be suspected of too much haste, however, I assure you that it was not their error which occasioned these changes. Due to the utilitarian purpose of the test in comparing overall performance and the limited funds available, it was impossible to tear down the refrigerators after the test to check claims as to kind of insulation used or to determine where the moisture collected which caused the increased weight. Information from several sources at the time of the test claimed that refrigerator No. 3 had either aluminum foil or Alfol insulation; hence our error which came to light only recently.

Where the term "insulation" is used in the first column on page 16, it could have been more descriptively worded as "insulation, moisture absorbing materials and space in which moisture can collect," all of which, to what may be called my naive way of thinking, is "insulation," although not homogeneous insulation or all equally effective.

Very truly yours,  
ROYCE E. JOHNSON.

### A Dealer Looks at the Trend in Guarantees

Zabel-Martin Co., Inc.  
Kenosha's Leading Appliance Merchants  
5805-09 Sixth Avenue  
Kenosha, Wis.

April 1, 1936.

Editor:

It was with a great deal of interest that I perused Mr. Harry Alter's article in your March 18 issue of REFRIGERATION NEWS, captioned, "Who will be the goat?" I believe that Mr. Alter should be congratulated by the entire refrigeration industry, from manufacturer through the dealer, for having the intestinal fortitude of bringing into the open, questions which amount to a challenge for the industry to answer.

We as leading refrigeration dealers in this city have viewed with alarm the transfer of guarantees from one year to a 5 year protection plan. It was bad enough medicine for the

dealer under the one year contract guarantee, yet it becomes a positive contingent when we have to add an additional four years to the customers' guarantee.

You see, this "service protection plan," is so misleading and easily suited to high pressure selling that there isn't one customer in 10 who can really tell you what the contract is; yet when any form of trouble occurs, is ready to fight and incidentally stop payments, if complete service is not immediately given. And this service can cover anything from replacing a belt to taking a dent out of the cabinet caused by Junior's Kiddy Car. The fact that practically all of the guarantees and protection plans vary in their respective phrasing and coverage, makes it nigh impossible for a salesman to cover this "protection contract" to the customer when several makes of refrigerators are handled.

We here at Zabel-Martin Co. have seen the confusion resulting from this so called Santa Claus plan. It forms the basis of customer dissatisfaction, and little adjustments that could be ordinarily billed after the one year period expires now become a bone of contention. Outside salesmen, eager to make a sale, often times give the impression that once the refrigerator is purchased the customer's responsibility ceases as far as service is concerned. That is a matter for the dealer and manufacturer. Our contacts with other dealers in this state lead us to believe that they have a similar problem.

Frankly speaking, the writer believes that the manufacturers have rightfully taken the refrigerator dealers for a buggy ride. We dealers not only lack the intelligence to see through their protection contract and the enormous profit reserves set up for this service by virtue of their \$5.00 charge, but also lacking in the guts, (pardon the French) to insist as a collective body that these manufacturers get down to earth with one guarantee that will cover the industry.

Surely we have no complaints with our present day radio warranty. And incidentally we sell many a refrigerator for less than some of these better radio consoles are being merchandised for today. We no longer hear the buyer of any of those beautiful new 1936 automobiles say he is getting gyped with a 90 day warranty . . . and the cars still deliver for several times the price of a refrigerator. It almost looks like we have honestly earned the laughs from the automotive industry.

And now . . . from one manufacturer we have the 10 year plan . . . 10 long years. Yes I admit that this protection contract covers certain component parts of the refrigerator . . . but . . . doesn't this simply act as another loop hole for dealer losses? Then again there's the moral contingent with the customer who expects service as long as the warranty or protection plan is in effect. What's to stop the "biggest of the big" at this stage of the game to announce a 15 year plan . . . or more? Whose generosity are they giving away . . . and won't it amount to, as Mr. Alter puts it, "a dangerous boomerang?"

Would it not be far better for the manufacturers to study the report entitled, "Results of University Tests on Refrigerators," as appearing in the March 25 issue of ELECTRIC REFRIGERATION NEWS, with a view of bettering their products. If the merchandise is built right, a one year guarantee becomes a liberal one, but if there continues to be weakness in design and construction, (and 1935 saw plenty) then a 15 year policy would be inadequate.

At any rate I am for Harry Alter and his timely open letter. The industry's big shots could well take a pointer or two from this gentleman. He knows his refrigeration, not only from the manufacturer's angle . . . but as a jobber he has had intimate contacts with every type of dealer problem . . . and he knows his stuff. Surely every sensible dealer who is looking ahead will sense in his questions the thoughts that are going through their individual minds at this time. I too say, "let some of the industry's big shots let us know just why these ridiculous guarantees and protection plans are in order." I'll wager my fourteen years' experience that they would be shocked to death, if the thinking mass of refrigeration dealers would speak up.

RALPH O. MARTIN, Secretary.

### Finds an Oil Burner Franchise Necessary

Byck Electric Co., Inc.,  
Savannah, Georgia,  
March 26th, 1936.

Editor:

As distributors for forty (40) counties for York air-conditioning and commercial equipment, and Leonard household units, we find it absolutely necessary to be connected with the heating industry, and will appreciate if you will announce this fact, so that the manufacturers of oil burners who care to be represented in this territory can take the matter up with us.

S. M. BYCK.

## Will FHA Finance Commercial Sales?

Johnson Music Store  
Ironwood, Mich.

Editor:

We would like to know how the new FHA financing effects the sale of commercial equipment. At the present we have a deal in the making consisting of a meat cooler, display case, and two condensing units; the customers credit is very good, and he would like to buy on the FHA plan. The contract was sent in to FHA offices in St. Paul, but have been returned for an indefinite period of time.

This condition practically leaves us in the dark as to their future activities. Have you anything to say that might shed a little light on this subject.

RUSS MASON.

Answer: We believe that FHA loans will be available for the purchase of commercial refrigeration equipment under the amended act (see story on page 1). Best thing to do is to keep after the nearest FHA office for a ruling, and then have them refer you to an insured loan institution.

## Specifications 'Greatest Help to Salesmen'

Pendleton Distributing Co.

P. O. Box 208,  
Shelby, N. C.

Editor:

In your March 11 issue of ELECTRIC REFRIGERATION NEWS, you state that the specifications on all makes of electric refrigerators will be out soon and that the charge for extra copies of this issue is 25 cents each.

Enclosed you will find \$1 in cash for which we ask that you send us four copies of this issue in addition to our regular copy.

We have found that this is the greatest help in any way that salesmen and others may use in checking up on claims made by other manufacturers in competition.

Trusting that this issue will soon be out.

W. G. PENDLETON.

## Wore Out Six Copies of Specifications Issue

Wilson's Electric Appliance Co.  
848 Broadway,  
Gary, Ind.

Editor:

Enclosed please find check for \$1 to cover cost of four extra copies of your Specifications Issue. We will undoubtedly order quite a few more after we have seen the issue, as we wore out about six copies last year and did not have enough to go around. We are a regular subscriber to your paper and find it very valuable. We believe it to be the only paper that covers the entire refrigeration industry, and would hate to be without it.

J. WILSON.

## Maximum of Information

William H. Day Co.,  
327 Guthrie St.,  
Louisville, Ky.

Editor:

Our check No. 5342 is enclosed in settlement of your March 13 invoice for renewal subscription to the ELECTRIC REFRIGERATION NEWS.

It is a pleasure, indeed, to send this remittance yearly as you all have, in my opinion, one of the finest trade publications I have read. I have had a lot of experience with lumber and veneer trade publications and while they are good, nevertheless you put into your paper a maximum of information and news for firms in the electric refrigeration game.

With best wishes for your continued success.

WILLIAM H. DAY,  
President.

## 'Rather Miss a Meal'

Pleasanton, Calif.

Editor:

I just received your March 4th issue and I believe it is my last one for I believe my subscription will run out. If you have not sent the next, the March 11 issue to me, please send it and start my next subscription year with it as you find a check enclosed to cover it. I would rather miss a meal than one of your copies. I am only a student but it sure gets me acquainted with this industry.

ALFRED HALLER.

## Self-Photographing Editor

A note written on an invoice returned with remittance:

"P. S. The writer would be glad to meet your traveling and photographing (self and others) editor when he reaches this city. Word to this effect is left c/o Harry Granary. Had the pleasure of meeting Mr. Redeker in Detroit a couple of years ago and am now anxious to see the other half of the team.—G. N. Benkley, Benkly & Roux, S. A. R. L., 21 Rue de Berri, Paris, 8e, France."



## During the "Hour of Ours"



Vice President C. E. Wilson, President Gerard Swope, and P. B. Zimmerman, general manager of General Electric Co.'s appliance and merchandise department, at the microphone during the "Hour of Ours," G-E's international-broadcast "sales meeting of the air," preface to the "Refrigerania Sweepstakes," spring sales drive.

## 1936 G-E 'New American Home' Program Looks to Construction of 400 Houses

NEW YORK CITY—Another "New American Home" campaign, to demonstrate the value of scientifically planned, up-to-date homes to prospective buyers and to the industry, will be sponsored by General Electric Co. this year, President Gerard Swope has announced.

Although G-E will not build any of the several hundred homes itself, Mr. Swope explains, it will contribute to the make-up of 170 local committees from its own personnel and will supply most of the promotion necessary.

With the cooperation of material and equipment manufacturers, architects, builders, and other related groups, over 300 homes were built in 1935. Approximately 400 are being planned for this year. J. F. Quinlan, 1935 manager, will again be in charge.

For 1936, the home-building plans will include the same specifications for medium-sized homes, built from the inside out to eliminate waste space and movement. Scientific lighting, wiring, air conditioning, modern kitchens, designs to permit maximum outdoor living if desired, sensible fenestration, and other concomitants of a well-planned, up-to-date house

will be incorporated, Mr. Swope says.

Leading magazines in the field of home-making will this year provide original house plans from which builders may make a selection. In this way, it is believed, the vast amount of pioneering in home development done in recent years by editors who have a close understanding of the needs of a modern family will find itself actually expressed in houses.

Builders working with "New American" committees will not be limited to house plans provided by magazines, but may use a local architect's plans and receive suggestions on engineering, equipment, and arrangement from the G-E home bureau, according to C. M. Snyder, bureau manager.

As part of the plan, houses will be built in cooperation with power companies, local newspapers, electrical dealers, decorators, and furniture and department stores. National promotion will spotlight this activity.

Official openings of the demonstration homes will be staggered, most of them occurring from Aug. 15 to Oct. 15. The committee expects that final arrangements with local committees and builders will be made by June 1.

## Reese Mills Tells How Barriers to Sales Of Electric Ranges Have Been Toppled

By Phil B. Redeker

CHICAGO—The electric range industry has "arrived" and there are no longer any barriers to restrict the sales of this major appliance. That was the message given to the utility sales executives at the third annual Edison Electric Institute sales conference by Reese Mills, manager of range sales for Westinghouse Electric & Mfg. Co., and chairman of the Range Section of National Electrical Manufacturers Association (Nema).

"The 20-year mark has just been passed by the electric range industry, and so has the million mark in sales," pointed out Mr. Reese. "History of other industries showed that most industries take 20 years to pass the million mark in sales, but that once this is achieved, sales increase very rapidly. We believe this to be the case of the electric range industry."

All the chief obstacles to electric range sales have been removed, Mr. Reese said. He outlined what these barriers had been and how they were eliminated, as follows:

1. Cost of operation. Refinements in the manufacture of ranges, plus rate slashes by power companies, has brought the cost of "cooking electrically" in line.

2. Combination utilities (those which supply both electricity and gas), no longer are fighting electric range sales. In many cases utilities which merchandise have formed two separate departments, and are expending as much promotional effort on electric range sales as they are on gas range sales.

3. Ranges are no longer "slow" in cooking meals. Improvement in design and construction have made the electric range as fast—if not faster—than any competitive form of cooking.

4. Service requirements are no longer excessive. The charge that ranges took too much service was a valid one for many years, but refinements in manufacturing processes have now reduced range service to a minimum.

"Reliable estimates indicate that 306,000 electric ranges will be sold this year, and 410,000 next year," declared Mr. Mills.

Range sales in 1934 increased 134% over 1933 sales, and 1935 sales were 79% greater than 1934 total sales, Mr. Mills averred.

In pointing out the market possibilities for ranges, Mr. Mills observed that there are 14 million homes with

rates that are satisfactory for electric cookery. He also stated that surveys have demonstrated that 64% of all types of cooking ranges now in use in American homes are either obsolete or inefficient.

"Excessive costs of installation due to antiquated local electrical code restrictions still remain a barrier to electric range sales in some localities," Mr. Mills advised the utility men.

He urged that utilities work with electrical contractors in consulting with the local authorities in an effort to have such codes revised and brought up to date.

As to what utilities might specifically do to increase range sales, Mr. Mills urged them to try some of the following approaches:

1. Give more attention to adequate range wiring in new homes. New residential building becomes a factor in the market for electric ranges this year, and utilities should work with the contractor to see that when the wiring is put in it will make an electric range installation possible.

2. Combination utilities should organize their electric range and gas range departments separately. Salesmen shouldn't have to sell both types of ranges.

3. More consideration should be given to the dealer as an outlet for electric ranges.

"History of electrical appliance selling has shown that good retail coverage is one of the main elements of success," explained Mr. Mills. "Utilities should do everything possible to encourage dealers' sales of ranges."

"A recent survey demonstrated that of the 'good' electrical appliance dealers in this country, 70% handle electric refrigerators, 71% handle washers, but only 53% are selling ranges," Mr. Mills continued.

"On the basis of this survey we are of the opinion that 13,700 stores are now handling electric ranges. This is not enough, but we have hopes that the number will be greatly increased in a short time, as a great number of dealers who are not handling ranges are now showing considerable interest in the possibilities of a range line."

Utilities can look to the Kitchen Modernizing Bureau to make the consumer conscious of electric cookery, Mr. Mills declared. He also pointed out that much support to modern, electrical cooking was being given by leading women's magazines.

## Milwaukee Breakfast Salesmanship Club Has First Meeting

MILWAUKEE—First of a series of breakfasts and lectures which comprise the Breakfast Salesmanship Course being conducted by the Wisconsin Radio, Refrigeration & Appliance Association, for salesmen of its dealer and distributor member companies, was scheduled for April 6 in the Sky Room of the Hotel Plankinton here.

Instigated to supply salesmen with new sales helps and suggestions, the course is being given under the direction of Gerald Stedman, vice president of the Cramer-Krasselt advertising agency. Meetings are being held each Monday morning throughout April from 7 to 8:30 o'clock.

Feature of the four-week course is that it is given to the men free of charge, the only expense connected being the 50 cent breakfast fee. Time for the meetings is scheduled so that a half hour is given to breakfasting, while the salesmanship lectures are given in the remaining hour.

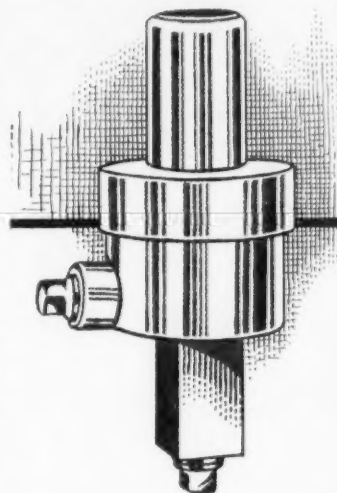
## Brown-Dorrance Appointed S-W Distributor

PITTSBURGH — Appointment of Brown Dorrance Electric Co. to distribute Stewart-Warner refrigerators and radios in this territory and in Akron, Ohio, was announced recently by F. A. Hiter, vice president and general sales manager of the Stewart-Warner Corp.

R. L. Balch will head the Akron distributing branch. The new distributor was appointed to succeed Hamburg Brothers as Stewart-Warner representative in both cities.

## OUTSTANDING Two-Temperature VALVE

Use this tested two-temperature valve where temperature is controlled through regulation of suction pressure.



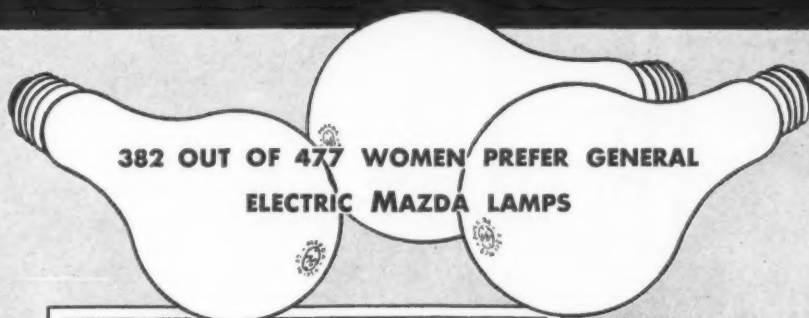
General application is to multiple systems but so sensitive is its control that it is frequently used on single applications where a closer and more constant regulation is required than can be furnished by the condensing unit control switch.



Write for descriptive illustrated literature.

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ORIGINATORS OF INSTANTANEOUS LIQUID COOLING DEVICES

## WHAT HAS THIS PREFERENCE FOR G-E MAZDA LAMPS TO DO WITH MOTORS FOR YOUR REFRIGERATORS?



WHEN shown different brands of lamps, housewives in six different cities were asked: "If you were buying lamps, which of these would you accept?"

In Cleveland  
93 out of 112 picked G-E MAZDA  
In Cincinnati  
77 out of 99 picked G-E MAZDA  
In Columbus  
49 out of 60 picked G-E MAZDA  
In Detroit  
65 out of 70 picked G-E MAZDA  
In Indianapolis  
70 out of 75 picked G-E MAZDA  
In Pittsburgh  
28 out of 61 picked G-E MAZDA

SIMPLY THIS: these women—and millions more like them—who picked G-E MAZDA lamps are also the real refrigerator buyers of the country. These shrewd purchasers are "fed up" on "bargains" that prove not to be bargains—they're now buying high-quality merchandise.

The G-E monogram means high quality to them—whether it is on a lamp or on a motor. And because it does, they associate additional quality with a refrigerator that is equipped with a G-E motor. That's why G-E motors WILL HELP YOU SELL REFRIGERATORS—why they will lower your selling costs and increase your profits.

Can you afford **not** to avail yourself of this sales appeal?

General Electric, Dept. 6A-201, Schenectady, N. Y.

070-122

**GENERAL ELECTRIC**



## Air Conditioning

### Compressor Biggest Item in Expenditure For Air Conditioning

BOSTON—The wide range of industries, including apparatus, materials, and service, which benefit by the installation of air-conditioning equipment is brought out in a survey which Boston Edison Co. recently conducted in its territory.

No less than 14 sources, the utility computed, benefitted from the \$701,700 worth of air conditioning now in service in the territory, investments ranging in price from a high amount of 35.5% for compressors, to a low of .5% for insulation.

Percentages of investments in the various items, and their approximate amounts, were estimated by the utility as follows:

	Per Cent	Amount
Compressors .....	35.5	\$249,103
Heat transfer units .....	20.7	145,251
Ducts .....	20.7	145,251
Wiring & safety switches .....	4.2	29,471
Blower and drive .....	3.8	26,664
Labor .....	4.52	31,716
Motors .....	2.1	14,735
Controls .....	1.9	13,332
Freight & haulage .....	1.7	11,928
Structural materials .....	1.5	10,525
Refrigerant .....	1.2	8,420
Copper tubing .....	0.98	6,876
Air filter .....	0.7	4,911
Insulation .....	0.5	3,508
<b>Totals .....</b>	<b>100.0</b>	<b>\$701,700</b>

### Candy Store Proprietor Explains Advantages Of Air Conditioning

CHICAGO—Hot summer temperatures need no longer spell lost sales for candy store owners—air conditioning will banish these profit pirates. That is the opinion which A. S. Kanelos, president of the chain of Andes candy shops has held since air-conditioning units were installed in ten of the chain shops here during 1935.

Equipment for these stores, located in the Loop district and in outlying shopping centers here, was installed by Westerlin & Campbell Co., Chicago distributor for York Ice Machinery Corp. For most of the installations, equipment consisted of a 2-hp York Freon condensing unit and a C-200 ceiling type air conditioner.

After the shops were air conditioned the factors which were greatly responsible for reduced summer profits—namely: melted, drippy candies, and chocolates that grew soft and changed color—were eliminated. As a result of this, last summer's sales corresponded with those made during the rest of the year, Mr. Kanelos claims.

Benefits obtained by installing air conditioning equipment in a candy store, Mr. Kanelos points out, are that stocks are kept fresh and attractive in appearance, the clerks are more efficient and pleasant mannered, and customers are put into a buying mood by the coolness of the shop.

### Two Carrier District Engineering Offices Moved to Newark

NEWARK—To centralize its contract air-conditioning operations in the eastern sales territory, Carrier Engineering Corp. has moved district office personnel responsible for engineering, installation, and service, to the home office here, reports L. R. Boulware, general manager.

The consolidation involves the transfer of approximately 100 persons from Carrier offices in New York and Philadelphia, who will now work under the centralized direction of Carrier's executive engineering department. This change does not affect the district office sales personnel.

Contracts recently obtained by Carrier call for the installation of air-conditioning equipment in Younker Brothers department store, Des Moines, Iowa, and for two floors of R. H. Macy & Co., New York City department store.

In Macy's, equipment costing approximately \$95,000 is to be installed to serve the second and third floors. Main floor and basement are already air conditioned.

A complete Carrier system will be installed in Younker Brothers, one of the middle west's largest department stores, at a cost of \$170,000. It will serve the entire store, seven floors and basement, with a total area of 233,000 sq. ft.

### To Handle A-P Controls

SAN FRANCISCO—California Refrigerator Co. here has stocked a complete line of A-P controls, manufactured by the Automatic Products Co.

### Air-Conditioning Installation for Nawab Ends Large Scale Domestic Discord

NEWARK—Carrier-Brunswick International Inc. here, has installed an air-conditioning system for the harem of the Nawab of Rampur, India, who, it is claimed, bought the equipment to restore peace, and eliminate domestic discord (on a large scale basis) in his palace.

According to Herbert L. Laube, vice president of the Carrier-Brunswick International Inc. the order was relayed to his office from the Carrier Engineering Co., Ltd., of New Delhi, Ind., with whom the Nawab had negotiated after (the story goes) considerable pressure from his many wives who had heard about the "magic cooling devices of the western

world," made the Nawab an air-conditioning prospect.

"The Nawab is now receiving love from contented women," Mr. Laube commented in discussing the order. "After all," he said, "the women of India are not much different from those in Newark. When they want a thing they know how to get it."

Installation of the air-conditioning plant, which is comparable in size to one used in a moderate sized motion picture theater, was recently completed. Several obstacles had to be overcome before the job was finished, Mr. Laube relates.

Because it was impractical to ship the large metal ducts already assembled, they were shipped in plates, and put together by native workmen who labored in the open, with temporary matting canopies suspended on poles to shield them from the sun.

Second obstacle that presented itself was the harem rule that no outsider is allowed to enter the harem. This problem was solved by moving the ladies of the harem to another section of the palace while the equipment was being installed.

Prior to the air conditioning, the harem received its only ventilation from "punkahs," huge rectangles of cloth suspended from the ceiling which created a slight air current when moved by leather thongs pulled by eunuchs.

### Conditioner Installed in Jewelry Shop without Harming Decorations

NEW YORK CITY—That air conditioning can be supplied without harming the appearance of an elaborately decorated shop interior was demonstrated here recently, when engineers of York Ice Machinery Corp. designed and installed an air-conditioning system for Udall & Ballau, retail jewelry store located at Fifth Ave. and 57th St.

Typical of the intricate decorative details which characterize the shop's interior, complicating the designing engineer's problem, is the silver-leaf covered ceiling, finish of which is said to have cost \$10,000.

Equipment for the installation included one 10-hp. York Freon compressor and one horizontal type York air conditioner.

Ingenuous feature of the installation was the arrangement of the outlet grilles, designed to harmonize with the decorative scheme.

To supply a maximum outlet velocity of air, and a wider and longer "spread" of air distribution, three-fourths of the face of the grille was cut off, without changing its design, or disturbing the surrounding plaster. This was done by inserting shields of sheet metal, folded in a flat plane, through the interstices of the grille, so that they could be opened to form the vanes and baffles of the grille.

### G-E Book Discusses Oil Heating Problems

BLOOMFIELD, N. J.—A non-technical discussion of the problems involved in the purchase of heating equipment is contained in a new book entitled, "Automatic Heating with Oil," just published by General Electric Co.'s air conditioning and oil heating department.

Fifty-eight illustrations accompany the text, most of them in four colors. Among the subjects covered in the book are fuels and combustion, heating plants, the distribution of heat, the boiler, the controls, and the hot water supply.

Other information covers the safety aspects of modern equipment and the various phases and latest developments of air conditioning. A second volume will appear shortly devoted exclusively to the latter subject.

**FILTRINE**  
WATER COOLERS  
STORAGE • SHELL & TUBE  
BROOKLYN, N. Y.

**M&E** COMMERCIAL  
DOMESTIC  
and BARE  
COMPRESSORS  
1/6 to 10 H. P.  
**MERCHANT & EVANS CO.**  
MANUFACTURERS  
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## Important Improvements IN THERMOSTATIC EXPANSION VALVES

Intensive research has brought important refinements in "Detroit" Thermostatic Expansion Valves providing greater reliability, better performance and longer life.

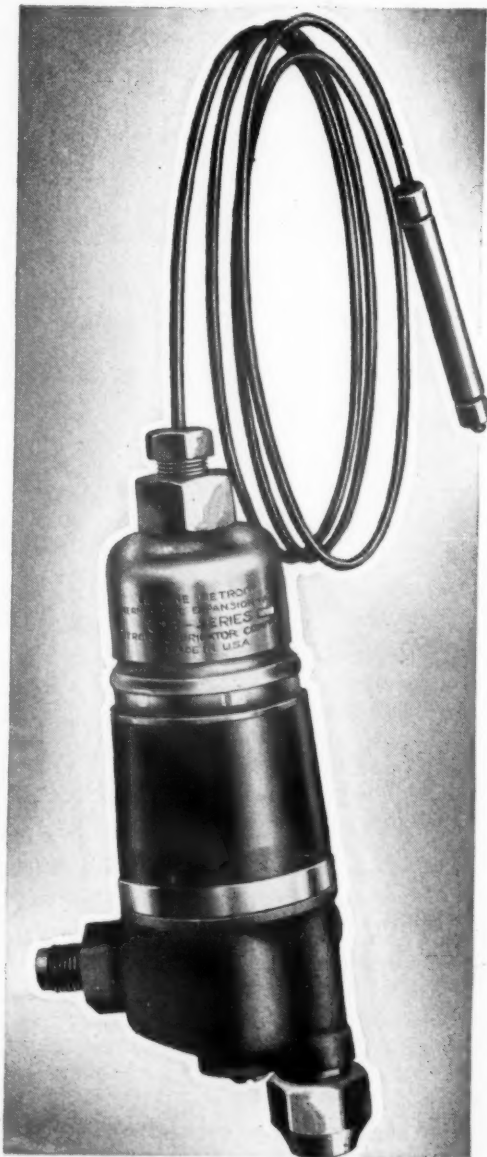
### 1 DURAFLEX BELLOWS

Detroit has developed "Duraflex", a superior bellows metal—one with far greater resistance to corrosion and fatigue than can be obtained with conventional materials.

Detroit "Duraflex" is now used in the bellows for all "Detroit" Thermostatic Expansion Valves. Exhaustive tests prove conclusively that "Duraflex" Bellows will outwear any other type construction.

### 2 "DELUBALOY" NEEDLES AND SEATS

The use of "Delubaloy" assures maximum resistance of needle and seat to corrosion, wear and erosion. It provides positive closure and reliable operation.



### 3 JOINT REINFORCEMENT

Every "Detroit" Valve now incorporates a bronze band shrunk around the Bakelite extension where it is attached to the body. This reinforces the joint and insures permanent tightness.

### 4 GAS CHARGING

All "Detroit" Valves have gas charged power elements to assure higher efficiency, instant action with no temperature lag, greater sensitivity, elimination of motor overload in starting, and perfect operating balance for the whole system.

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DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

Canadian Representative—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, Montreal, Toronto, Winnipeg



## Industry Representatives Make Final Pleas on New York Code

(Concluded from Page 1, Column 2)

asked Mr. Michaels his opinion of an indirect open spray system using sulphur dioxide as a refrigerant, with a brine solution such as that described in the test report to neutralize the irritant effect of the sulphur dioxide.

Such a system was safe, believed Mr. Michaels, as long as the brine was up to full strength; however, he expressed the thought that with such a system the brine solution would have to be tested two or three times a month, as it might become diluted.

F. A. Eustis of the Virginia Smelting Co. requested a copy of the report to study before making any comments. Mr. Eustis also declared that the Underwriters Laboratories were now working on a new test for the use of a special brine where sulphur dioxide is the refrigerant, and that results of this test would be available in the near future.

Commissioner Giaccone then started to review the proposed code as revised Jan. 24, asking for objection on the various provisions as they were read.

Under Article 1, section 1, (Definitions) L. W. Kulh of Norge Corp. objected to provision "I" (Refrigeration Systems of the Sealed Type), declaring that it be revised to read as follows:

"A refrigerating system which does not depend upon moving surfaces for the retention of the refrigerant."

A representative of the American Standards Association objected to definition "Z-5" (Air Conditioning). He suggested that air conditioning was a more general term than that implied by code, and that the definition in the code should be put under the heading "Air Cooling."

Definition "Z-5" was defended by Mr. Michaels, who stated that if it read "Air Cooling" it would cover the cooling of air for all commercial applications as well as air conditioning for human comfort, which was undesirable. Commissioner Giaccone expressed himself as being in accord with Mr. Michaels' viewpoint, but agreed to take the suggestion under advisement.

E. T. Williams, New York City consulting engineer, also objected to definition "Z-5" and recommended that the words "for human comfort" be omitted so that the code covered air conditioning for industrial purposes, as well as for human comfort.

Mr. Michaels answered this by saying that where air conditioning is used for industrial purposes, the persons exposed to any existing hazards are familiar with the hazards and are employed to work under such conditions.

### Covers Only Comfort Applications?

In a counter-reply Mr. Williams declared that the code should offer protection anywhere that persons are present, regardless of the nature of the building or its use.

Mr. Michaels said in return that where persons were paying for admission to the theaters, hospitals, and the like, that they are entitled to protection against hazards and that was what the code was designed to cover.

Robert Bryan of Frigidaire Corp. pointed out that most of the air-conditioning systems used for industrial purposes were for product-cooling applications. Commissioner Giaccone closed the discussion on this point, stating that he would take the recommendations under advisement.

P. S. Lyon of the General Electric Co. air-conditioning department, objected to definition "Z-8" as being unnecessarily restrictive on installations in residences.

According to Commissioner Giaccone, this definition is compulsory under Section 70 Article 4 of the New York City Building Code.

### License Needed by Plumbers

Mr. Burtell of the New York Edison

Co., commenting on Section 216 c (Permits and Approvals) asked if it would be necessary for a plumber making a gas connection for the installation of a gas refrigerator to have a service man's license, or whether the license of the New York Edison Co. would cover the plumber. Commissioner Giaccone declared that the plumber should have a license.

When asked if the corporation would be responsible for a poor installation job resulting in a hazard, Mr. Michaels answered that both the corporation and the installer would be held responsible.

### Objects to Provision on Home Installation

Mr. Kulh of Norge Corp. objected to that part of the code requiring a licensed installer of household refrigeration, pointing out that a report from the Medical department of the City of New York shows that there have been only three deaths from sulphur dioxide since 1913.

A representative of the New York Telephone Co. brought up the question as to whether a system installed prior to the code would have to be serviced by a licensed man after the code goes into effect. Commissioner Giaccone answered that although the code was not retroactive, servicing of all systems should be done by licensed men.

Mr. Holske of the Knickerbocker Ice Co., New York, objected to Section 217 c (Supervision) which permits an operator of a big refrigeration plant to make only emergency repairs. He expressed the belief that if the operator is capable of making emergency repairs, that he can also make regular repairs, without having to call in a licensed installation and service man to make such repairs.

This clause was defended by Mr. Michaels, who stated that an operator does not have an installer's license, and is therefore not considered capable of making other than emergency repairs.

Herbert Herkimer of New York City brought up the point that the license fee covered in Section 216 c, calling for payment by the licensee of an initial fee of \$25, with \$5 per year thereafter, would be prohibitive for the small service man, and suggested that the fee should be graduated, depending on the size of the company and the number of employees working under the licensed company.

Commissioner Giaccone expressed himself as believing that Mr. Herkimer's point was a good one, and said it would be given consideration.

Under Section 217 d, Mr. Williams said that he did not see why it was necessary to have a licensed installer merely "plug in" a self-contained electric refrigerator or air conditioner, and stated further that if a unit system could be moved from one location to another in the same building by an unlicensed man (as provided for the code), an unlicensed man should be permitted to make the original installation.

### Work Needed on Self-Contained Models

Commenting on this, Mr. Lowell of Kelvinator Corp. declared that many of the unit type refrigerators are not securely fastened in the base of the cabinet, needing to be properly suspended on springs; and that the proper valves should be opened before the installation was completed, and therefore the original installation should be made by a licensed man.

A representative of the Institute of American Meat Packers objected to the provision which makes it necessary for refrigerating systems of the fully automatic type with over 200 lbs. of refrigerant to have a full-time attendant. He asked that fully automatic plants containing up to 1,000 lbs. of refrigerant be allowed to operate without supervision.

Mr. Michaels defended the provision as it now stands, relating the number

of times the fire department had found it necessary to break down the doors of a store or plant to shut off valves on a leaky system, or to find that a motor was burning up. He said that if the limit was raised to 1,000 lbs. there would be no supervision at all.

### Eustis Talks on Methyl Chloride

Under Section 218 (Classifications of Refrigerants) Mr. Eustis launched a discussion on methyl chloride, averring that this refrigerant is not really irritant, but that it has a rather pleasant odor.

Mr. Eustis pointed out that while methyl chloride was flammable in certain concentrations, that the concentrations had to be within certain limits. He urged that the Table of certain Classifications be changed to show methyl chloride as a flammable refrigerant only when present in certain concentrations, and stated that when used in limited quantities, it should not be restricted by the code. He submitted his report on methyl chloride in writing.

In answering this contention, Mr. Michaels declared that all these things had been taken into consideration in forming the refrigerant "yardstick" which the Code classifications provide, and he declared that he wanted to stick to the "yardstick." Commissioner Giaccone declared that the matter would be taken under advisement.

A. H. Eustis of the Virginia Smelting Co. discussed sulphur dioxide as a safe refrigerant when used with absorbent brine, and agreed that the cost of the inspection of the brine solution should be born by the owners of the equipment. Mr. Michaels contended that it would be difficult to depend on such brine tests unless made by the department.

### Questions Department's Jurisdiction

Under Section 219-2 c (Permissible Locations, Residence Buildings), Mr.

Lowell of Kelvinator expressed the belief that the code did not permit the installation of a unit system air conditioner on the second floor of a residence building where the compressor was installed in the basement. He contended that the code should not restrict installations in residence buildings.

W. W. Rhodes of Kinetic Chemicals Co. advanced the opinion that the Fire department had no jurisdiction over single dwellings so far as refrigerating systems were concerned.

A representative of the American Radiator Co. suggested that (c) under "Filters and Air Ducts" etc. which reads: "Air filters of combustible fibrous materials will not be permitted" should have added—"unless flame or fire proofed."

Mr. Michaels objected to the idea of fireproofing air filters, declaring that the proofing materials might come off in years of service.

Mr. Relkin of Mueller Brass Co. objected to the restriction on solder fittings under Section 224 (Piping, Tubing, Fittings), claiming that tests had demonstrated that solder made the best and strongest joint. Mr. Michaels declared that he intended to stick to his present provision which prohibits the uses of solder on piping that is larger than 2 1/2 inches o. d.

Mr. Cole of the Copper and Brass Research Association asked that the question of solder be left open for further discussion.

The representative of the American Standards Association suggested that the code be revised to permit the use of larger grille openings, where the grille opening was near the ceiling or out of the way, and not presenting a hazard. Mr. Michaels thought this point was well taken.

Mr. Lyon expressed himself as believing that the provision requiring that ducts be protected by 2 in. of non-combustible material was too re-

strictive, inasmuch as it was not feasible to use this much protection in a residence building with narrow partitions, and in old buildings.

He pointed out that an Underwriters Laboratories report declares that only 1/2 in. of non-combustible material is necessary. Mr. Michaels said that he would look over the report.

In discussing Section 225 (Safety Devices) the question was raised as to the proper kind of a relief device for shell-type receivers more than 6 in. in diameter. Mr. Michaels declared that only spring-loaded pressure relief valves would be approved.

As the hearings closed Mr. Kulh of Norge Corp. made an address in which he reviewed the course of the electric refrigeration industry, and objected to its being classed as a hazardous industry.

He declared that in his opinion the Fire department should confine its efforts to really hazardous appliances such as gas stoves, and to "lay off" refrigerators until they had been proved dangerous.

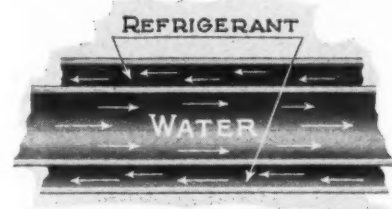
Commissioner Giaccone asked Mr. Kulh if the code as written would impose any burden on the housewife. Mr. Kulh said that it would in that she would have to get a licensed man to install and service her refrigerator.

Mr. Michaels got in the final word, arguing that it would be better for both the housewife and the industry to have licensed men install and service household electric refrigerators.

## Watson's Dept. Store Adds Frigidaire Line

BRIDGEPORT, Conn. — Watson's, Inc., local department store, has been appointed a dealer for Frigidaire household refrigerators. George M. Watson heads the appliance department.

### 20 QUALITY FEATURES



(No. 8)  
Serval Counter-Flow Condensers Maintain Low Head Pressure, Reducing Current and Water Costs.

## ASK THE SERVEL DEALER

He'll tell you he is making money on every Serval sale.

He'll tell you that he's "in" on every job with a model that

fits—priced in keeping with its capacity. He'll tell you he

can figure his profits right from the start because excessive

"free" service doesn't eat into them . . . You'll find the

Serval dealer and his salesmen enthusiastic and happy—

because their business is gaining every week . . . There may

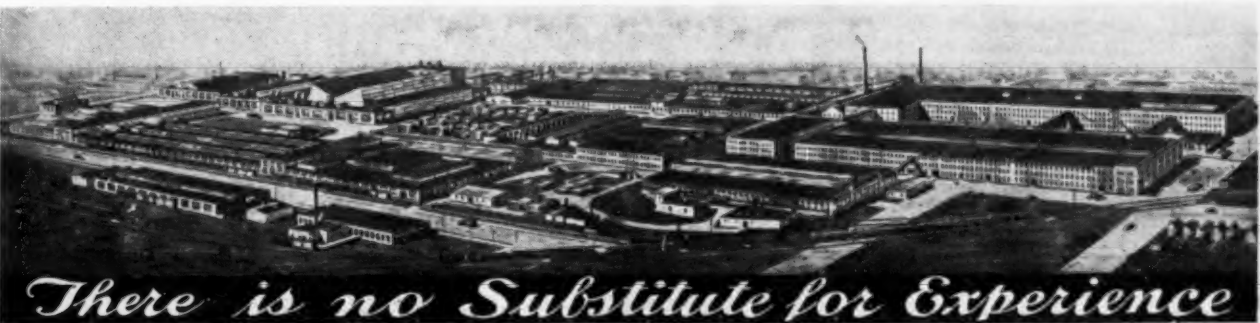
be an opening for a live Serval dealer in your city. A letter

or a wire will bring details.

## SERVEL COMMERCIAL REFRIGERATION

SERVEL, INC. Commercial Refrigeration Division EVANSVILLE, IND.

This modern 33-acre plant is the home of Serval Commercial Refrigeration and the world-famous Electrolux, the Serval Gas Refrigerator

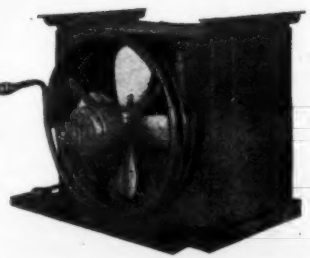


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## 27 UNIT COOLERS

by KRAMER

Hourly capacities  
varies from 5 lbs.  
I.M.E. to 200 lbs.  
I.M.E. Air Range  
(C.E.M.) 125 to  
1550.



LIST PRICES from \$60 to \$322

A fan unit to serve any application

Detailed information listed in Kramer Refrigerating Equipment catalog No. 336. Send for your copy.

TRENTON AUTO RADIATOR WORKS

210 West 65th, N.Y.C. TRENTON, N. J. 5114 Liberty Ave., Pittsburgh, Pa.

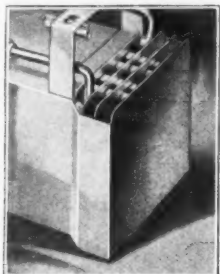


## Humidi-Pack Evaporator Introduced by Peerless For Household Models

CHICAGO—Four models of Peerless humidi-pack household refrigeration evaporators for replacement purposes have been introduced by Peerless Ice Machine Co.

Quick freezing is accomplished with these evaporators, say Peerless engineers, by the trays being in contact

### New Evaporator Features



The new humidi-pack evaporator features this fin arrangement on the face

with coils at both the top and bottom of the sleeve, and through hermetically bonding the copper tubes to the top and bottom of copper tray sleeves.

Proper humidity is accomplished through special features in design, it is claimed. These are: (1) fins on back; (2) arrangement of fins so as to give flue effect of fast circulation.

By having the coils and fins so arranged, it is also pointed out, the housewife can wash all sides when the evaporator is defrosted.

Baffle fronts on the humidi-pack evaporators are of white porcelain.



## SELL HER WATER CONDITIONING AND MAKE BIG PROFITS

● Here is a new nationally-advertised, major household appliance that every woman wants for her home. Your sales arguments are the things she is interested in—beauty, health, cleanliness, saving in time, labor, money!

● Prove these sales arguments right in the prospect's home by using a beautiful, light, chromium-plated demonstrator.

● At the time refrigerators and oil burners are at their lowest, Permutit sales are good; they are not seasonal. Financed under FHA terms, Permutit fits in with your present selling methods and answers a real need.

● DISTRIBUTORS—a number of good territories are still open. 100% cooperation to help you obtain dealers and make consumer sales. Local cooperative advertising, forceful campaigns, free sales training courses, etc. Let us show you what others are doing.

THE PERMUTIT COMPANY  
Room 723, 330 W. 42nd St., New York City  
Please send me, without obligation, complete details of your merchandising plan and money-making proposition.

Company .....  
Address ..... City.....  
Signed by .....

# Servicing Capacitor—Start Induction—Run Motors

Refrigerator Motor Troubles Diagnosed; Probable Causes, Tests, Remedies Presented in Convenient Tabular Form by Wagner Electric Corp. for Use of Field Service Engineers

### PROBABLE CAUSE

### TEST AND REMEDY

#### (A) Failure to Start

1. Blowing of fuses or operation of overload device.

1. Examine motor bearings, be sure that they are in good condition and properly lubricated. Be sure motor and driven machine both turn freely. Check circuit voltage at motor terminals against voltage stamped on motor name plate. Examine overload protection of motor. Overload relays operating on either magnetic or thermal principles, or a combination of the two, offer adequate protection to the motor. Ordinary fuses of sufficient size to permit motor to start do not protect motor against burnout. A combination fuse and thermal relay such as the Buss Fusetron protects the motor and is inexpensive. If motor does not have overload protection the fuses should be replaced with overload relays or Buss Fusetrons. After installing suitable fuses and resetting overload relays, allow the machine to go through its operating cycle and if protective devices again operate, check the load. If motor is excessively overloaded take up with the appliance manufacturer.

2. No voltage or low voltage.

2. Measure volts at motor terminals with switch closed. See that it is within 10% of voltage stamped on name plate of motor.

3. Open-circuited field.

3. Indicated by humming sound when switch is closed. Examine for broken wires, loose connections.

4. Improper current supply. Incorrect voltage or frequency.

4. Requires motor built for operation on power supply available. A.C. motors will not operate on D.C. circuit or vice versa.

5. Condenser short circuited or open circuited.

5. See F.

6. Improper line connection.

6. See that connections are exactly like connection diagram which is sent with motor. (See Fig. 3.)

7. Excessive load.

7. If the motor starts idle and if all the above conditions are O.K. then failure to start is most likely due to excessive load. To determine this definitely make or have a reliable electric shop make a test of starting torque. Wagner fractional horsepower capacitor-start induction-run motors have a starting torque of 400% or more of full load torque. If the load requires more than this a larger motor is required.

If this figure is 400% of full load torque and motor fails to pull in, consult the nearest Wagner branch inasmuch as this would indicate either a misapplication of the motor, resulting in too great a load, or an increased load due to faulty driven apparatus.

To Determine the Load:

a. PRONY BRAKE (See Fig. 1). This method is probably the most generally used. It requires a pulley, brake arm, and scale (may be either platform scale or spring balance, if platform scale be sure that load is applied to center of platform, if spring balance is used the pull must always be at right angle to the brake arm, and in either case scale must have small enough variations to accurately read torque on smaller rated motors). Brake arm should be made up so that the distance between center of pulley and contact point where load is measured is exactly 12 inches. Scale reading will then be in pounds feet. BEFORE STARTING TEST MAKE SURE THAT DIRECTION OF ROTATION IS SUCH THAT BRAKE ARM WILL BE MOVED AGAINST BALANCE.

### PROBABLE CAUSE

### TEST AND REMEDY

In order to measure starting torque clamp arm to pulley tight enough to allow pulley to turn very slowly—read scale when slowly turning. To measure pull in torque release brake clamp until motor is just able to pull up to speed. The true pull in torque is the highest scale reading for which the centrifugal switch inside the motor will operate.

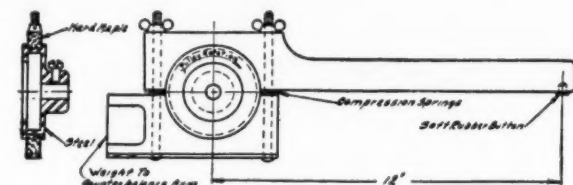


Figure 1

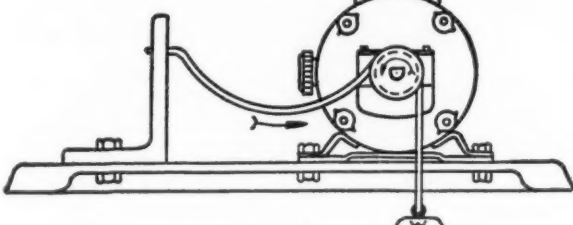


Figure 2

b. ROPE AND WEIGHT (See Fig. 2). This method gives equally satisfactory results and yet does not require the equipment of the Prony Brake method. It requires a smooth face flanged iron pulley, rope, and weight. Tie one end of the rope to the projection from the test bench so that the rope will be at 90° to the shaft. Wrap the rope around the pulley opposite to the pulley rotation and hang a weight on the free end of the rope. Wrap sufficient turns around the pulley so that the tied end of the rope will be slack when the weight is lifted and the pulley rotates. To prevent the rope from gripping the pulley, oil or paraffin the rope slightly. Be sure that the hanging weight does not touch the floor or test bench. SOME PROTECTIVE MEASURES SHOULD BE TAKEN TO PREVENT THE WEIGHT FROM INJURING THE OPERATOR IN CASE THE ROPE GRIPS TOO TIGHT. Proceed to test as follows. Increase the weight until the motor will just start, then calculate as follows:

For example, to make starting test on a 1/4-hp., 1725-r.p.m. motor select a 4-in. pulley, 1/2-in. rope, and necessary weight. If assortment of graduated weights are not handy use bucket and sand (or shot) adding weight so that pulley is slowly turning.

$$\text{Brake Arm} = \frac{\text{Pulley Dia. in inches} \times \text{rope dia. in inches}}{12 \times 2}$$

$$= \frac{4 \times .125}{24} = .172 \text{ Ft.}$$

$$\text{Starting Torque in Lb. Ft.} = \text{Brake Arm} \times \text{weight hung on rope} = .172 \times \text{weight}$$

$$\text{Full Load Torque in Lb. Ft.} = \frac{\text{Full Load HP.} \times 5250}{\text{Full Load RPM}}$$

$$= \frac{.25 \times 5250}{1725} = .76 \text{ Lb. Ft.}$$

$$\text{Starting Torque in \% of F. L. Torque} = \frac{\text{Starting Torque}}{\text{Full Load Torque}}$$

While both of these methods are widely used by small service organizations for checking test values on electric motors of all sizes, it should be specially noted that both methods do contain an element of danger to the operator, and should be used with extreme care from the standpoint of both safety to operator and accuracy of test results.

8. Shorted stator.

8. See C-2 below.

#### (B) Excessive Bearing Wear

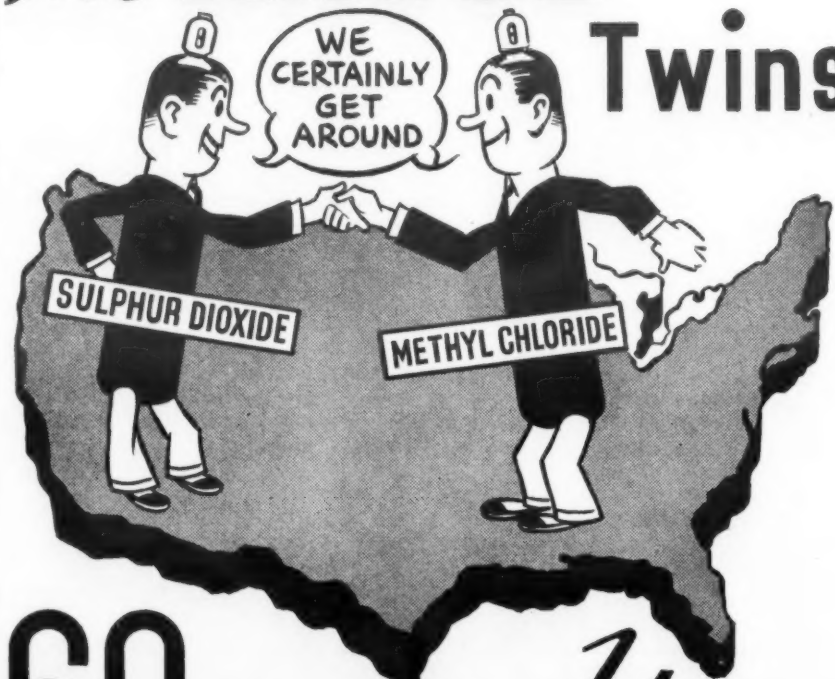
1. Belt tension too great; unbalanced or out-of-line coupling; eccentric or too closely meshed gears.

1. Belts, either flat or "V", should have only sufficient tension to prevent slipping. "V" belts usually require less tension than an equivalent flat belt. Slipping of belts will cause pulleys to heat (touch), squeak (sound), or burn (smell).

In case of unbalanced or out-of-line couplings or eccentric or too closely meshed gears—correct mechanical condition.

(Concluded on Page 15, Column 1)

## The ANSUL Twins



60 DISTRIBUTORS TO SERVE You

No matter where you are located there is an Ansul warehouse nearby carrying complete stocks of Ansul analyzed Sulphur Dioxide and Methyl Chloride. Write today for the location of the nearest distributor.

ANSUL CHEMICAL COMPANY  
MARINETTE • • • • • WISCONSIN

## GILMER V-Belts

QUIET  
V-Belts for  
Refrigerators  
Oil Burners  
Beer Pumps  
Water Pumps  
Washing Machines  
Woodworking Tools

1936  
CATALOG  
is now  
ready

FRACTIONAL horsepower belts in the three standard F. H. P. cross sections... 3/8", 1/2" and 21/32". The new catalog contains Gilmer sizes on complete listings. Write for yours today.

L. H. GILMER CO., Tacony, Phila.

MAKERS OF THE WORLD'S BEST-KNOWN V-BELTS

Gilmer  
BELTS



## Service Instructions of Capacitor-Start Induction-Run Motors

(Concluded from Page 14, Column 5)

### PROBABLE CAUSE

### TEST AND REMEDY

2. Improper, unclean, or insufficient oil.
3. Dirty bearings.

2. The lubrication system of Wagner small motors provide for supplying the right amount of filtered oil to bearing. It is only necessary for the user to keep wool yarn saturated with a good grade of machine oil.
3. When bearings get clogged with dirt motor may need protection from excessive dust. Application may be such that especially constructed motor should be used—consult Wagner.

### (C) Motor Runs Hot

(Don't judge motor temperature by feel of hand. Measure it with a thermometer and check with temperature rise stamped on name plate.)

1. Bearing trouble.
2. Short circuited coils in stator.
3. Rotor rubbing stator.
4. Excessive loads.
5. Low voltage.
6. High voltage.
7. Incorrect line connections to motor leads.

1. See condition under B.
2. Shorted coil may be located by fact that one coil feels much hotter than other. Very great increase over normal magnetic noise may also indicate shorted stator.
3. Some extraneous matter may be between rotor and stator, or bearings may be badly worn.
4. Be sure proper pulleys are on motor and machine. Driving the load at higher speed requires more horsepower. Take an ammeter reading. If current draw exceeds name plate amperes for full load, the answer is evident.
5. Measure voltage at motor terminals with line switch closed. Should not vary more than 10% from value stamped on name plate.
6. See No. 5.
7. Check with connection diagram sent with motor.

### (D) Motor Burns Out

1. Frozen bearings.
2. Some condition of prolonged excessive overload.

1. Causes may be same as under B.
2. It is important that the load be examined carefully before the burned out motor is replaced so as to locate and remove the cause of the overload. Certain jobs such as refrigerators will, under unusual conditions of operation, apply prolonged overloads which may destroy a motor and which may be difficult to locate unless examined carefully. On jobs where it is assumed somewhat intermittent service will normally prevail and which consequently are closely motored, the load cycle should be especially checked, as a change in this feature will easily produce excessive overload for the motor. Examine carefully to determine mechanical condition of the driven appliance.

### (E) Motor Is Noisy

1. Unbalanced rotor.
2. Worn bearings.
3. Switch rattles.
4. Excessive end-play.
5. Motor not properly aligned with driven machine.
6. Motor not firmly fastened to mounting base.
7. Loose accessories on motor.
8. Air gap not uniform.
9. Amplified motor noises.

1. When transportation handling has been so rough as to damage the heavy Wagner shipping case, it is well to test motor for unbalance conditions at once. It is even possible (though it rarely happens) that a shaft may be sprung. In any case the rotor should be rebalanced dynamically.
2. If unduly frequent, examine for cause. See B.
3. Install new switch hub and felt washer.
4. End play should be reduced as near as possible to zero. In doing this be sure the bearings do not bind. Rotor must turn freely. Washers supplied by factory should be used in making this adjustment.
5. Correct mechanical condition.
6. All Wagner small motors have steel bases so they can be firmly bolted to mounting without fear of breaking. It is, of course, not to be expected that the base should be strained out of shape in order to make up for roughness in mounting base.
7. Such parts as oil covers, capacitor box or cover, guards, if any, on end plate, etc. should especially be checked for security if they have been removed for investigation of any sort. The condenser box should be tightened when top is fitted after connections are made. Pulley must be tight on shaft.
8. This results from sprung or unbalanced rotor. (See No. 1 above.)
9. When this condition is suspected, set motor on a firm floor, and if motor is quiet, then the mounting is acting as an amplifier to bring about certain noises. Frequently correction of slight details in the mounting eliminates this but rubber-mounted type motors almost invariably do.

### (F) Tests for Electrolytic Condensers

1. To obtain the capacity in microfarads.
2. Test for open circuits.
3. Test for shorts.

1. Remove all motor leads from the condenser terminal board. Apply rated voltage at 60 cycles across terminals of condenser and measure volts and amperes. The capacity in microfarads is approximately

$$\text{Capacity} = 2650 \times \frac{\text{amperes}}{\text{volts}}$$

The above formula applies to a test made at 60 cycles only. This test should be made with a fuse in series with the condenser to protect the line in case the condenser is shorted.

Capacity of condenser should not be less than the rated value marked on cardboard case of condenser but may exceed it by any amount up to 40%.

2. Remove all motor leads from the condenser terminal board. Apply rated voltage at 60 cycles across terminals of condenser with an ammeter in series. If the ammeter shows no current reading the condenser is open circuited. This test should be made with a fuse in series with the condenser to protect the line in case the condenser is shorted.

3. Remove all motor leads from the condenser terminal board. Apply rated voltage at 60 cycles to the condenser terminals with a fuse in series. If the fuse blows the condenser is short circuited. A 10-ampere fuse will be ample for testing a 110-volt condenser of 150 MF rating or smaller. For larger condensers use a heavier fuse.

### PROBABLE CAUSE

4. Test for grounded condenser. General.

### TEST AND REMEDY

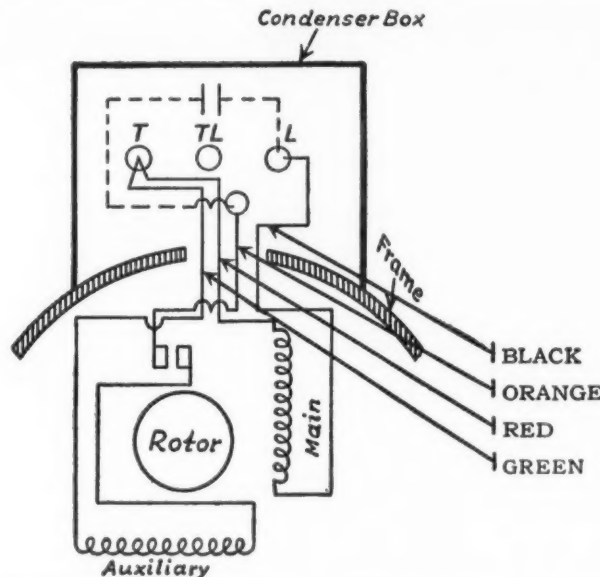
4. To determine whether a condenser terminal is grounded to the metal container remove all motor leads and apply rated voltage between the terminal and the metal container with a 10 ampere fuse in series. If the fuse blows the condenser is grounded.

If both terminals are grounded to the metal container these grounds will constitute a short circuit. (See "3-Test for Shorts.")

If only one terminal is grounded to the case no harm will result since the container is insulated from the condenser compartment by means of a cardboard box.

If voltage is applied between one of the terminals and the metal container a slight spark may occur when the circuit is broken. This is due to leakage of current through the electrolyte between the terminal and the metal container and does not indicate a ground or a defective condenser. The condenser is not grounded unless enough current flows when making this test to blow a 10-ampere fuse.

Electrolytic condensers are intended to stand intermittent applications of voltage over short intervals and will be injured if the voltage is left on too long. When making these tests the voltage should not be applied to the condenser any longer than is necessary.



### 8 Lathe Models Made By South Bend Firm

SOUTH BEND, Ind.—A new 9-inch "Workshop" precision lathe, in eight different models, both bench and floor-leg style, and four different lengths, from 3½ to 4½ feet, has been put on the market by South Bend Lathe Works.

Features claimed for the new lathes include a simplified twin-gear reverse for cutting right and left-hand screw threads of 4 to 40 per inch; a counter-shaft of either double-fraction or horizontal type, with other plain or adjustable belt tension; back-gear headstock with larger spindle bearings and new ball-bearing thrust collar; heavier designed saddle; and simplified gearing for threads and speeds.

Metals of all kinds may be machined, including cast, iron, steel, cast steel, steel forgings, wrought iron, brass, bronze, copper, babbitt, aluminum, and alloy steels and metals.

Six spindle speeds, ranging from 39 to 630 r.p.m., are available on the standard headstock, three obtained on the open belt and three in back gear. Four-step, two-step, and single-step cone headstocks are optional. A set of attachments is also available.

The lathe is designed for use in groups on production of small duplicate parts in the manufacturing plant, for tool rooms, machine shop, laboratory, school shop, repair shop, and home workshop.

INFORMAL TALK NUMBER 44

## We Pay Their Fare and Train Them in Our Shops

The Refrigeration and Air Conditioning Institute is the only school in the field that makes actual shop work a mandatory part of its training.

On the average, our students spend 600 hours in the study of all technical phases of refrigeration and air conditioning in their own homes. This in itself gives them a broad and practical knowledge, useful to employers everywhere.

In addition, after completion of the home preparatory work, we furnish them with round trip transportation to Chicago where they are given 100 hours of practical shop work on standard apparatus, under the direction of competent instructors.

Write for details of this officially endorsed and industry supervised training.

The REFRIGERATION AND AIR CONDITIONING INSTITUTE

2150 LAWRENCE AVENUE • CHICAGO



The Officially Endorsed School

### Airo Supply Co. Issues Catalog of Parts

CHICAGO—Airo Supply Co., wholesale distributor of refrigeration and air-conditioning parts and supplies, has just issued a 96-page spring catalog listing its 1936 line of parts, tools, supplies and accessories.

Additions to the company's line of supplies this year include compressor replacement parts for several makes of refrigerators; a complete line of brass pipe fittings; packless line shut-off valves; dehydrators and strainers in all sizes and capacities; ice cube and defrosting trays; electric motors; cabinet hardware; shop and service tools; steel pulleys, and capacitor condensers.

### Tucker Heads Sales for Baltimore Store

BALTIMORE—M. F. Tucker has been promoted from assistant manager to manager of the refrigerator department of Hochschild, Kohn & Co., department store here.

## Letters from Service Men

### Students Get Practical Experience Rebuilding Used Refrigerators

435 22nd St.  
West New York, N. J.  
April 2, 1936.

Editor:

After reading over my letter, published in the March 25 edition, I find I gave the address of the Universal Refrigeration School as 350 Madison Ave. The correct address is 352 Fourth Ave. I am at a loss to explain how I came to give this address.

Is that heading "Service Company Uses Students Help and Charges for Instructions" a knock or boost for the school?

The school is affiliated with one of the largest jobbing houses; buying up old refrigerators and rebuilding them for resale. I believe the school has the right way of teaching refrigeration. You need theory, but you need the practical work to be able to repair the job when you go out in the field. They have the jobs with the real trouble and it is up to the student to find that trouble and repair it.

We have had students come from other schools having graduated with diplomas and say, "I am just learning refrigeration now. All we learned at the other school was theory, and the teacher would take a bolt out of a refrigerator or change the expansion valve and then have us repair it."

In our school neither the teacher or the student know what is wrong with the job when it is brought up to him. The school has a few hundred boxes at all times to be repaired.

The school has rented another floor and a student may take up air conditioning and oil burning. This course will be handled in the practical and theoretical way also, as the student will be able to install a regular air-conditioning job right on the floor. The teaching will be done by W. K. Greene. Mr. Valentine has not been able to take over the production line, due to ill health. FRED ASSELMAYER, JR.

### Inspired by Grover's Letters


732 W. Hill St.  
Wabash, Ind.

Editor:

As I am attempting to work up a service business as a sideline to gain experience in electric refrigeration I would like to have my name placed on the list for your Catalog Mailing service.

I am an ardent reader of the NEWS and must say that the letter you published from Grover A. Townsend has been the greatest inspiration I have had since becoming interested in this work two years ago.

PAUL BARNES.



## This Booklet

DESCRIBING THE

# 9100 LINE

for

## COMMERCIAL REFRIGERATION

*Is Yours for the Asking*

This condensed catalog gives a full description of Square D's 9100 Line of Regulators for commercial refrigeration controls of the pressure, vacuum and temperature types.

This booklet will be mailed to you, postage paid, if you will merely fill in the coupon below and mail this advertisement to the Square D Company, Regulator Division, Detroit, Michigan

Export Dept., Regulator Division, H. M. Robins Company, 120 Madison Avenue, Detroit, Mich.

Check Classification	Square D Company, Regulator Division 6060 Rivard Street, Detroit, Michigan
<input type="checkbox"/> Serviceman	Please forward without charge the Regulator Catalog described in this advertisement.
<input type="checkbox"/> Dealer	Name _____
<input type="checkbox"/> Jobber	Street & No. _____
<input type="checkbox"/> Mfg.	City _____ State _____



## The Buyer's Guide

Suppliers Specializing in Service to the Refrigeration and Air Conditioning Industries

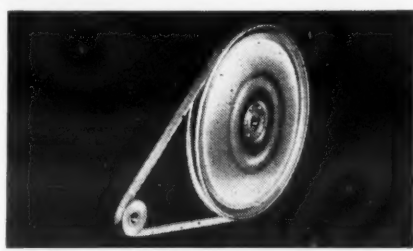
LEADING MAKERS OF REFRIGERATING AND AIR CONDITIONING EQUIPMENT STANDARDIZE ON

## Dayton V-BELTS

• Because of their outstanding advantages Dayton V-Belts have been used as original equipment on leading makes of air conditioning equipment, electric refrigerators, washing machines and other appliances for many years.

Dayton V-Belts are the logical choice because they provide silent, dependable transmission—because their powerful grip prevents slippage—because they run smoothly without weaving, twisting or vibrating.

A nearby distributor carries a complete stock of Dayton V-Belts at all



Whether for Fractional or a Thousand H.P. there is a Dayton V-Belt Drive for the job.

times and can quickly supply you. Write us for price list and complete information.

THE DAYTON RUBBER MANUFACTURING CO. • DAYTON, OHIO  
World's Largest Manufacturer of V-Belts

## STEELCRAFT REFRIGERATOR CABINETS

WE MANUFACTURE DISTINCTIVE FOUR AND SIX CU. FT. MODELS

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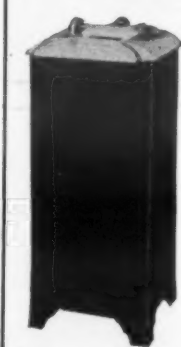
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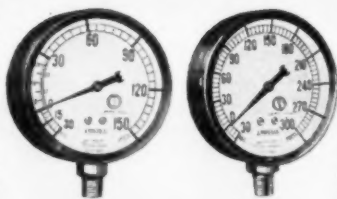
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## Greater Purchasing Power, More Sales Is Outlook for '36

NEW YORK CITY—Expanding public purchasing power and the prospective further growth of home building and repair activity should provide an important stimulus to sales of home furnishings this year, according to the current household products and supplies section of Standard Trade and Securities, published by Standard Statistics Co.

Demand for semi-luxury household products has been sharply stimulated by general business recovery, the bulletin says. Payment of the bonus should also have a favorable influence on household products sales, since a substantial part of these funds will likely be spent for homes and home improvements.

Indications are that average profit margins in the household products industry will be more satisfactory this year than last. Better operation ratios, coupled with prospective larger volumes, should enable manufacturers as a whole to extend the 1935 earnings betterment materially, it is stated.

Notwithstanding the records set by electric refrigerators and washing machines during 1935, all indications point to further substantial gains this year, the bulletin says. Mechanical refrigeration, it adds, is no longer considered a luxury. The deferred replacement demand for other appliances, which accumulated during the depression, has been only partially satisfied during the past two years, the survey indicates.

"Profit margins will probably remain narrow, but, with tooling and introductory expenses out of the way, the prospective larger volume should be translated into considerably improved manufacturers' earnings," the bulletin says.

Two manufacturers of mechanical refrigeration equipment, Kelvinator Corp. and Servel, Inc., and two ice companies, American Ice Co. and City Ice & Fuel, are mentioned in the bulletin's section devoted to survey of household products stocks.

Of Kelvinator, the bulletin says: "Unit sales for the first five months of the current fiscal year ran substantially ahead of year-earlier levels. With the company now entering the period of seasonally high activity, a favorable trend of both sales and profits should be maintained. Earnings this year should be sharply above the \$1.05 a share reported for the 1935 fiscal year, and larger dividends are possible."

Servel: "Increase sales during the quarter ended Jan. 31 resulted in net for this period of 16 cents a common share, against a deficit of 13 cents a share in the like period a year earlier. Substantial betterment is expected for the year as a whole; profits are likely to be well above the 16 cents a common share reported for the previous fiscal year. Upward adjustment of the indicated 50 cents annual dividend rate is possible."

American Ice Co.: "Lower ice sales and demoralized price conditions resulted in a drastic earnings decline last year. Net for the year was 22 cents a share of \$6 preferred, equal to a deficit of \$1.44 a share on the common. The outlook remains unimpressive, although moderately better results may be attained for the current year."

City Ice & Fuel: "Earnings for 1935 were the poorest in a decade. The outlook for this year is more promising, however, since the weather may be more favorable for ice sales, and the prospective further improvement in general business should tend to increase demand and prices for ice. Thus, while the long term outlook is for a gradual down-trend of profits, a temporary reversal of the recent sharp decline may be seen."

## The Refrigeration Engineer's Manual

By S. L. Potts

## Function of Accumulators In Evaporators Explained

### Chapter 7—Evaporators Float Valve Control

Flooded or float valve control, sometimes referred to as gravity feed, is the second type of regulation of evaporation in the evaporator. All coil evaporators are improved in operation by adding an accumulator or liquid stand pipe. The accumulator collects the gas and liquid escaping from the evaporator and provides a large space in which the gas can separate from the liquid. The gas is drawn off the top of the accumulator to the compressor and the liquid returns to the evaporator to do useful work.

Any form of coil evaporator can be operated flooded with an accumulator. The wetted surface of pipe increases the rate of heat transfer through the pipe walls. The accumulator overcomes the troubles caused by surging.

Accumulators are usually small tanks seldom more than 6 to 8 inches in diameter, and for vertical evaporators as long as the coil is high. For horizontal coils about 24 to 30 inches is long enough. The accumulator stands on end. The bottom pipe of coil is

through the coils again. The head that produces the circulation in pipes is caused by the difference in head produced by a mixture of liquid and gas in the evaporator pipes, and the head due to the liquid in the accumulator. The greater proportion of gas and liquid in pipes the less the head in pipes and the more rapid the circulation. The float valve maintains a constant liquid level in accumulator.

Fig. 63 is the same with the exception that the incoming liquid is cooled in the coil before entering the accumulator. The cooling takes place after the pressure is lowered.

Fig. 64 is the same as 63 except that the liquid is cooled at high pressure instead of low pressure.

Fig. 65 is an arrangement that might be used in some special cases.

All these accumulators are placed inside the refrigerator box or as close to the brine tank as is possible.

In Fig. 66 is shown the evaporating coils used in many types of domestic refrigerators. The tank A acts as an accumulator. It contains the reserve of refrigerant and collects the gas formed in the coils or pipes (which are usually copper). The liquid is kept at a constant level by

### Household Unit Evaporator

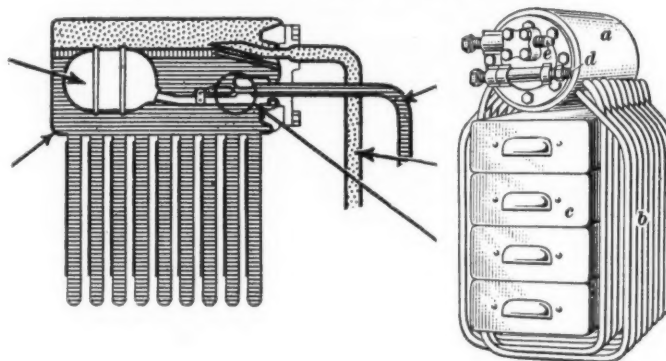


Fig. 66—Tank "a" acts as an accumulator in this typical domestic refrigerator flooded evaporator (Frigidaire). Liquid level is controlled by the float shown below, which operates a valve in liquid line.

connected to bottom of accumulator and the top coil to the top of accumulator. The suction pipe to compressor connects to top of accumulator. The liquid line may be connected in many different ways all designed to give some special results.

In Fig. 62 is shown the usual arrangement of accumulator for vertical evaporator coils. The liquid enters through the expansion valve B and the float valve in the accumulator. It flows by gravity through the coil and returns to accumulator mostly gas but some slugs of liquid. The gas and liquid are readily separated, the gas being drawn off to suction line and the liquid falling to bottom to go

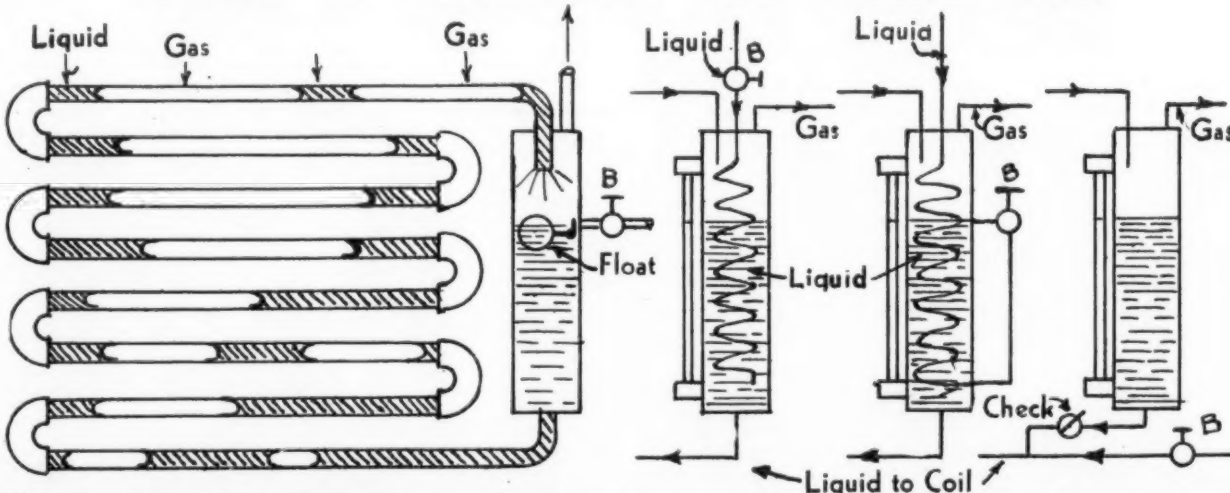
a float in the cylinder which operates a valve in the liquid line. The suction gases are drawn off the top.

### Shell & Tube Evaporators

The shell and tube type of evaporator is commonly used as a brine cooler in ice freezing tanks. The refrigerant is inside the shell surrounding the tubes. The brine is pumped through the tubes. The liquid level varies inside this shell according to the load placed on the evaporator. For maximum load the shell is nearly full of liquid. For lesser loads, the level can be lower.

(Concluded on Page 18, Column 3)

### Setups of Accumulator with Vertical Coils



Figs. 62, 63, 64, and 65—The usual arrangement of an accumulator for vertical evaporator coils is shown at the left. In the second arrangement, the incoming liquid is cooled in the coil before entering the accumulator at low pressure. In the third setup, liquid is cooled at high pressure. At right is an accumulator with reserve liquid.



*Issued March 17, 1936*

2,034,030. REFRIGERATING APPARATUS. Richard S. Gaugler, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio. Application April 20, 1934, Serial No. 721,516. 5 Claims. (Cl. 62—108.5.)

2,034,053. TEMPERATURE CONTROL APPARATUS. Leigh F. Morgan, Springfield, Mass. Application Nov. 10, 1934, Serial No. 752,506. 1 Claim. (Cl. 236-92.)

2,034,069. PISTON COMPRESSOR HAVING ROTARY VALVE GEAR. Heinrich Walti, Winterthur-Wulfingen, Switzerland, assignor to the firm of Sulzer Freres Societe Anonyme, Winterthur, Switzerland. Application Feb. 1, 1934, Serial No. 709,324. In Switzerland Feb. 9, 1933. 6 Claims. (Cl. 230-225.)

2,034,138. REFRIGERATING APPARATUS. Richard E. Gould, Dayton, Ohio, assignor, by mesne assignments, to General Motors Corp. Application July 3, 1931, Serial No. 548,590. Renewed Dec. 30, 1932. 15 Claims. (Cl. 220—9.)

2,034,149. REFRIGERATION. Carl Georg Munters, Stockholm, Sweden, assignor to Platen-Munters Refrigerating System, Aktiebolag, Stockholm, Sweden. Application May 25, 1932, Serial No. 613,351. In

2,034,153. COMPRESSOR UNLOADER. Clyde E. Ploeger, Evansville, Ind., assignor to Servel, Inc., New York, N. Y. Application April 28, 1931, Serial No. 533,441. 16 Claims. (Cl. 230-23.)

2,034,213. PORTABLE ICE CREAM FREEZER. Ernest F. Smith, Greenwood, Nebr., assignor of one-third to H. W. McFadden and one-third to H. L. Reynolds, Maywood, Ill. Application Oct. 25, 1934, Serial No. 749,957. 6 Claims. (Cl. 62—114.)

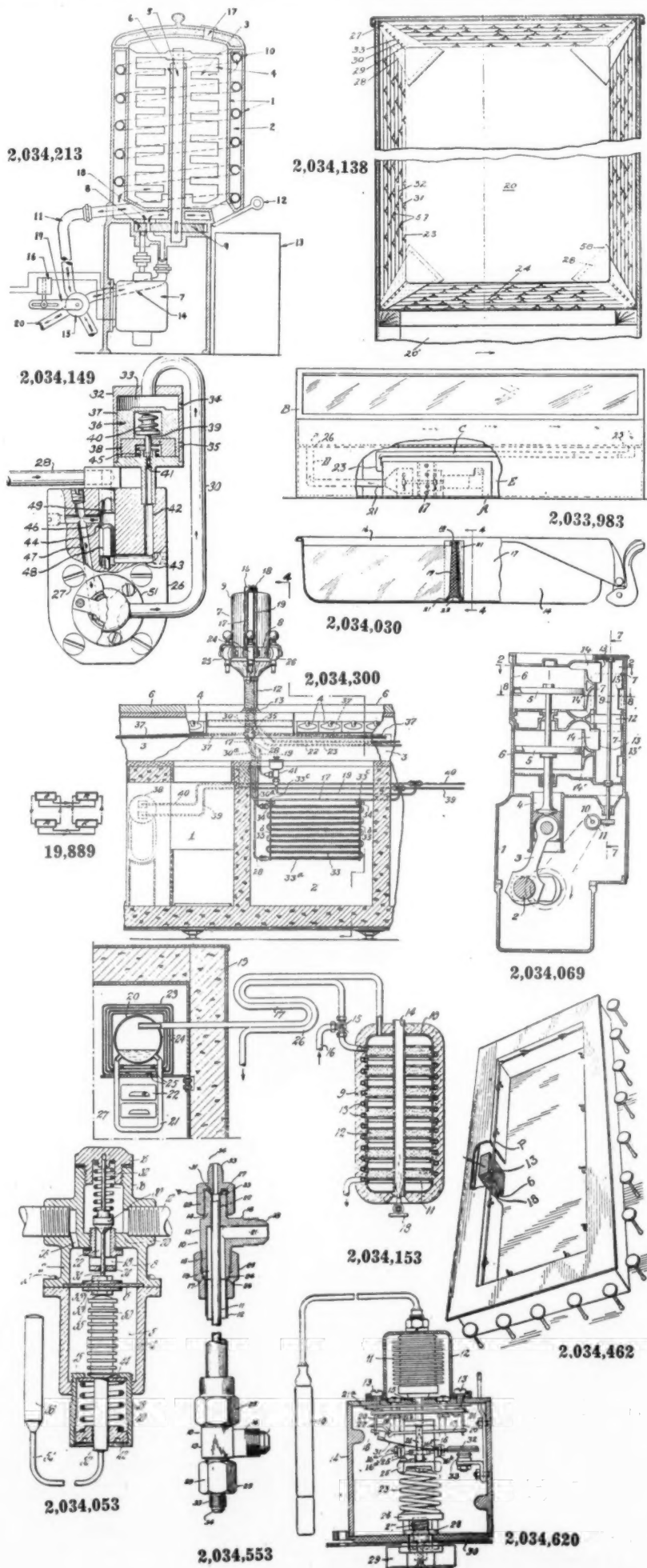
2,034,300. MECHANICALLY COOLED DISPENSING APPARATUS. Herbert C. Kellogg, Detroit, Mich., assignor to Temp-rite Products Corp. Application Aug. 28, 1931, Serial No. 559,865. Renewed July 2, 1934. 29 Claims. (Cl. 62-141.)

2,034,462. REFRIGERATING APPARATUS. Ivan L. de Jongh, Los Angeles, Calif., assignor, by mesne assignments, to General Motors Corp. Application April 20, 1927, Serial No. 185,243. Renewed July 3, 1935. 3 Claims. (Cl. 62-141.)

2,034,553. HEAT INTERCHANGER.  
Joseph Askin, Buffalo, N. Y., assignor to  
Fedders Mfg. Co., Inc., Buffalo, N. Y.  
Application July 12, 1935, Serial No. 31,002.  
3 Claims. (Cl. 257-246.)

2,034,620. REFRIGERATOR CONTROL-  
LER. Lawrence C. Irwin, Brooklyn, N. Y.  
Application March 3, 1932, Serial No.  
596,473. 12 Claims. (Cl. 62-4.)

19,889. ABSORPTION REFRIGERATING SYSTEM. Edmund Altenkirch, Neuenhagen, near Berlin, Germany, assignor, by mesne assignments, to The Hoover Co., North Canton, Ohio. Original No. 1,887,957, dated Nov. 15, 1932, Serial No. 369,358, June 8, 1929. Application for reissue Sept. 28, 1934, Serial No. 745,929. In Germany June 16, 1928. 47 Claims. (Cl. 62-119.5.)



(Editor's Note: In last week's Electric Refrigeration News the patent descriptions were incorrect for the date of issue given. Correct descriptions for patents issued March 10 are given below, and the correct illustrations are at the right.)

2,033,228. REFRIGERATING APPARATUS. Ralph M. Buffington, Evansville, Ind., assignor, by mesne assignments, to General Motors Corp. Application May 28, 1930, Serial No. 456,617. Renewed July 24, 1935. 7 Claims. (Cl. 62-178.)

2,033,402. HEAT EXCHANGER. Arthur Leroy Smith, Bryn Mawr, Wash. Original application March 27, 1933, Serial No. 662,877. Divided and this application June 27, 1935, Serial No. 28,595. 4 Claims. (Cl. 257-245.)

2,033,410. THERMOSTAT. Bernard W. Dezotell, West Roxbury, Mass., assignor to United Electric Controls Co., Boston, Mass. Application Aug. 7, 1934, Serial No. 738,784. 1 Claim. (Cl. 200—140.)

2,033,554. REFRIGERATING APPARATUS. Harry F. Smith, Dayton, Ohio, assignor, by mesne assignments, to General Motors Corp. Application Jan. 29, 1932, Serial No. 589,676. Renewed June 26, 1933. 19 Claims. (Cl. 62-116.)

2,033,560. REFRIGERATING PACKER. Walter T. Wells, Glendale, Calif., assignor to The Technicraft Engineering Corp., Los Angeles, Calif. Application Nov. 12, 1932, Serial No. 642,369. Renewed Aug. 20, 1934. 11 Claims. (Cl. 166—1.)

2,033,665. MEANS FOR CONTROLLING DEWPOINT. Leona Esther Young, Berkeley, Calif., assignor of one-fourth to William H. Rees, Berkeley, Calif. Application March 26, 1934, Serial No. 717,461. 2 Claims. (Cl. 183-4.)

2,033,792. SLIDING CABINET SHELF. Philip T. Sywert, Scotia, and James L. Knight, Schenectady, N. Y., assignors to General Electric Co. Application Oct. 21, 1930, Serial No. 490,268. 10 Claims. (Cl. 211-153.)

2,033,828. REFRIGERATING APPARATUS. Edward Heltman, Detroit, Mich., assignor to Kelvinator Corp., Detroit, Mich. Application July 30, 1934, Serial No. 737,544. 10 Claims. (Cl. 62-4.)

2,033,844. COOLING APPARATUS. David W. R. Morgan, Swarthmore, and John W. McNulty, Ridley Park, Pa., assignors to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Application Oct. 20, 1933, Serial No. 694,512. Renewed Feb. 7, 1935. 13 Claims. (Cl 62-152.)

2,033,845. COOLING APPARATUS. John W. McNulty, Ridley Park, and Millard A. Nelson, Prospect Park, Pa., assignors to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Application Oct. 20, 1933, Serial No. 694,513. 9 Claims. (Cl. 62-152.)

2,033,859. SLIDING SHELF STRUCTURE. Otho M. Otte, Tarentum, Pa., assignor, by mesne assignments, to General Electric Co. Application Sept. 2, 1931, Serial No. 560,741. 30 Claims. (Cl. 211-143.)

2,033,861. REFRIGERATOR SHELVING.  
Otho M. Otte, Tarentum, Pa., assignor,  
by mesne assignments, to General Electric  
Co. Application July 16, 1932, Serial No.  
622,866. 9 Claims. (Cl. 211-143.)

## PATENTS

**HAVE YOUR** patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. **H. R. Van Deventer (ASRE), Patent Attorney, 342 Madison Avenue, New York City.**

## F-M Appoints Ericksen Radio Sales Manager

INDIANAPOLIS—W. Paul Jones, general manager of the appliance division of Fairbanks, Morse & Co. has announced the appointment of Parker H. Erickson as sales manager of the company's radio division.

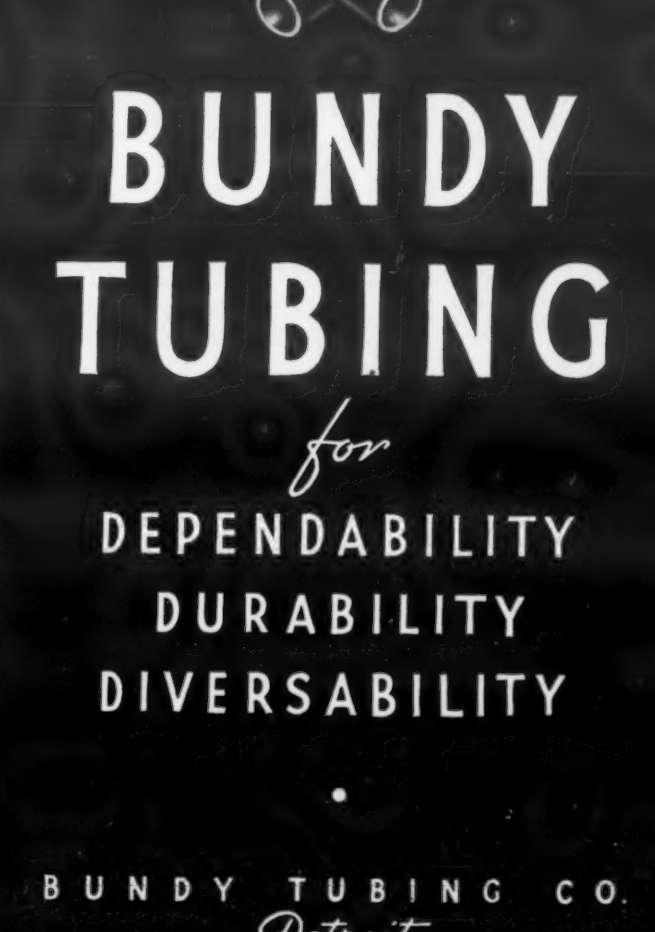
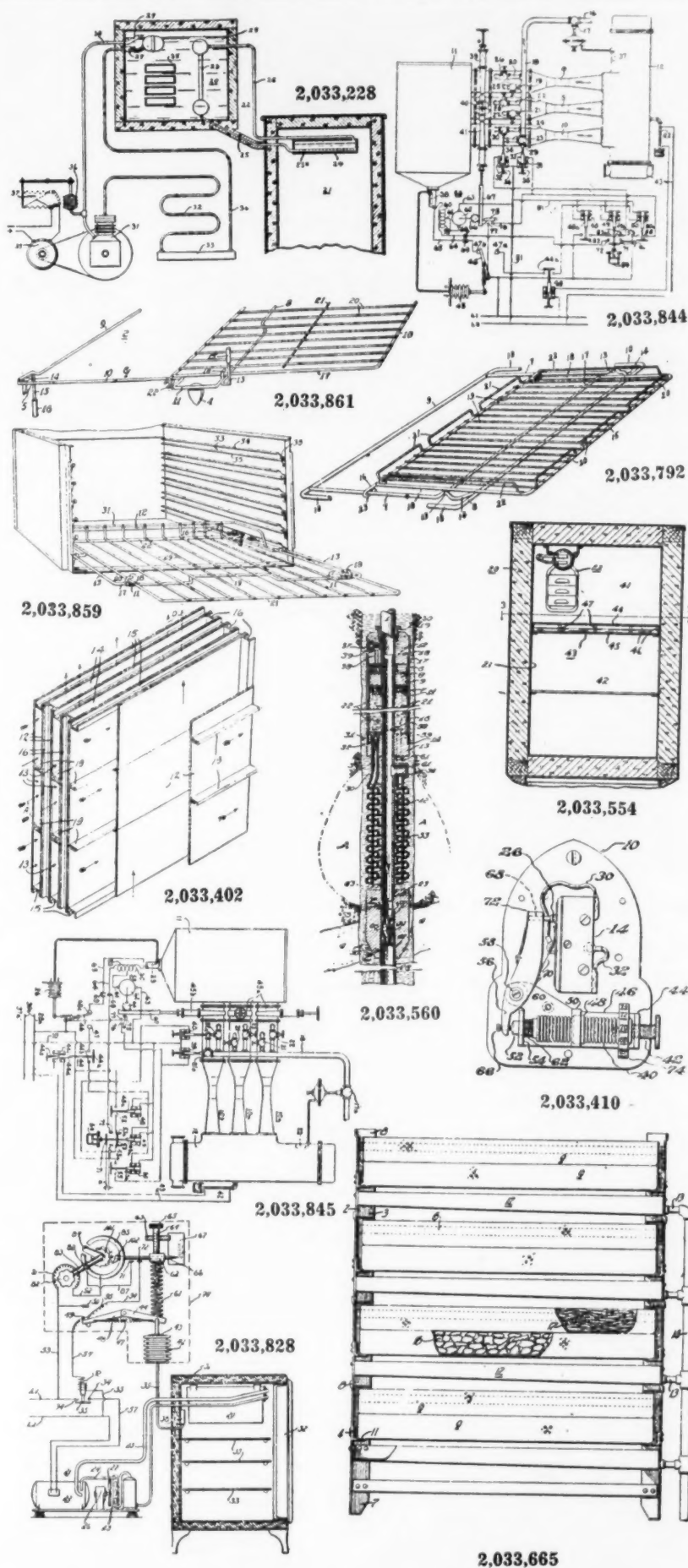
Previous to the formation of his association with Fairbanks-Morse, Mr. Ericksen was successively, sales promotion and advertising manager of the Zenith Radio Corp. Before this, he was connected with a midwestern advertising agency where he handled radio accounts.

## Hartford Co. to Distribute Copeland in 3 States

HARTFORD, Conn.—Associated Oil Burner Co., Inc., manufacturer of distillate oil burners, 30 Bartholomew Ave. here, was recently appointed exclusive distributor of Copeland household electric refrigerators in Connecticut, Vermont, and western Massachusetts.

## Divine Quits Westinghouse Store Sales Post

**MANSFIELD**—Vern C. Divine, for some time department store supervisor of household refrigeration sales for Westinghouse Electric & Mfg. Co., has resigned his position, effective April 1.



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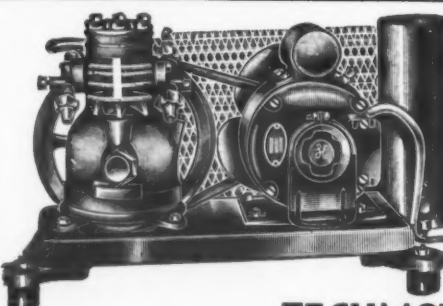
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# KASON HARDWARE



Manufacturers of Fine Refrigerator Hardware

KASON HARDWARE CORP., 127-137 Wallabout St., Brooklyn, N.Y.

## Horizontal Shell & Tube Evaporator

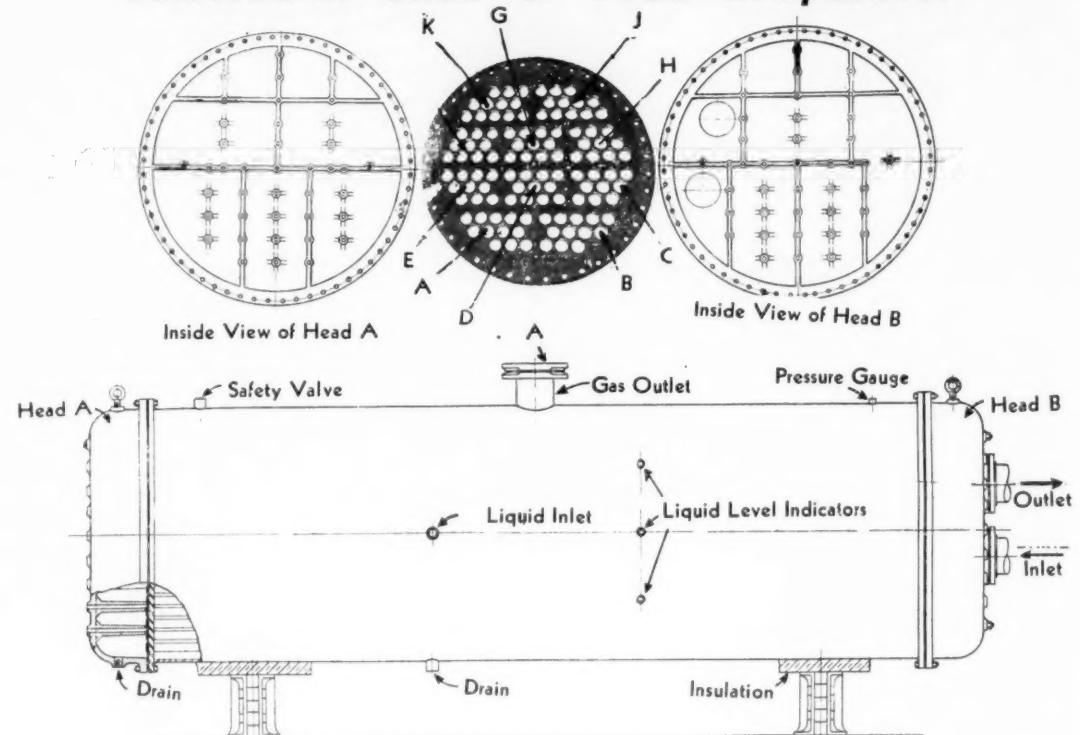


Fig. 67—Horizontal shell and tube evaporator for brine cooling. This evaporator is of the multi-pass type, and the path of the brine is as follows: Enters at A, then through B, C, D, E, F, G, H, and J, leaving from coil K.

## Characteristics of Evaporator Types Compared

(Concluded from Page 16, Column 5)

In this type of evaporator there is ample surface for the liberation of the gases formed inside without surging or raising the liquid level any noticeable amount. The dry saturated gases are drawn off the top. The liquid may be introduced at any convenient location.

The tubes are fastened into the heads by rolling and beading or by flaring or by welding. The heads are frequently welded to the shell. In general this evaporator is very much like a horizontal tubular boiler without the furnace setting. The velocity of brine passing through the tubes should be about 100 to 120 ft. per minute. Higher velocities require too much power.

The rate of heat transfer in this type of cooler is about 80 B.t.u. for one square foot of surface per hour for each degree difference of temperature.

In Fig. 67 is shown a horizontal shell type evaporator used for indirect refrigerating systems. The brine passes through the tubes. The ammonia evaporates inside the shell of the evaporator, the gases are taken off the top to the compressor. The heads on the shell are arranged with partitions so that the brine passes through a number of times. In Fig. 67 the brine makes 10 passes.

## Advantages of Coil Evaporator

1. Best adapted to cooling air.
2. Well adapted to cooling liquids.
3. Vertical coil evaporators with variable load require constant attention when operated by expansion valve.
4. Occupy space that is not valuable as storage space.

## Disadvantages of Coil Evaporator

1. Coils with return bends require many joints with the possibility of leaks.
2. When operated with expansion valve, the gas formed in the liquid is restrained from separating easily. The gas rising in coils causes surging and rushes of liquid to the suction line. Vertical evaporator coils are the worst for this trouble. Horizontal coils are less trouble.
3. To prevent too much liquid entering suction line the expansion valve must be operated to keep the amount of liquid inside the evaporator below a level that would make it possible for a surge to carry liquid over to compressor.
4. Superheated suction gas reduces the volumetric efficiency of the compressor and lowers the output of the whole plant.
5. Evaporator coils when operated under the flooded system require about twice as much refrigerant as when operated on expansion valve.

## Advantages of Flooded Operation

1. Simplicity of operation.
2. Each evaporator is supplied with the liquid as needed and in accordance with the rate of evaporation in that evaporator.
3. Suction gas leaving evaporator is dry and saturated—there are no slugs of liquid.
4. The entire inner surface of evaporator is wet affording the most rapid rate of heat transfer through pipe walls.
5. The suction pressure can be raised somewhat above the suction pressure of the expansion operation without raising the temperature in refrigerated space.

## Disadvantages of Flooded Operation

1. More refrigerant required for operation.

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Table 9—Standard Dimensions of Wrought Pipe

Size in Inches	Diameters		Circumference		Transverse Area		Pipe Length	
	External Inches	Approx. Internal Inches	External Inches	Approx. Internal Inches	External Square Inches	Internal Square Inches	External Surface Per Sq. Ft.	Internal Surface
1/8	0.405	0.269	1.272	0.845	0.129	0.057	9.431	14.199
1/4	0.540	0.364	1.696	1.144	0.229	0.104	7.703	10.493
3/8	0.675	0.493	2.121	1.549	0.358	0.191	5.658	7.747
1/2	0.840	0.622	2.639	1.954	0.554	0.304	4.547	6.141
3/4	1.050	0.824	3.299	2.589	0.866	0.553	3.637	4.635
1	1.315	1.049	4.131	3.296	1.358	0.864	2.904	3.641
1 1/4	1.660	1.380	5.215	4.335	2.164	1.495	2.301	2.767
1 1/2	1.900	1.610	5.969	5.058	2.835	2.036	2.010	2.372
2	2.375	2.067	7.461	6.494	4.430	3.355	1.608	1.847
2 1/2	2.875	2.469	9.032	7.757	6.492	4.788	1.328	1.547
3	3.500	3.068	10.996	9.638	9.621	7.393	1.091	1.245
3 1/2	4.000	3.548	12.566	11.146	12.566	9.886	0.954	1.076
4	4.500	4.026	14.137	12.648	15.904	12.370	0.848	0.948
5	5.563	5.047	17.477	15.856	24.306	20.006	0.686	0.756
6	6.265	5.665	20.813	19.054	34.472	28.891	0.576	0.629
8	8.625	8.071	27.096	25.356	58.426	51.161	0.442	0.473
8	8.625	7.981	27.096	25.073	58.426	50.027	0.442	0.478
9	9.625	8.941	30.238	28.089	72.760	62.736	0.396	0.427
10	10.750	10.192	33.772	32.019	90.763	81.585	0.355	0.374
10	10.750	10.136	33.772	31.843	90.763	80.691	0.355	0.376
10	10.750	10.020	33.772	31.479	90.763	78.855	0.355	0.381
11	11.750	11.000	36.914	34.558	108.434	95.033	0.325	0.347
12	12.750	12.090	40.055	37.982	127.676	114.800	0.299	0.315
12	12.750	12.000	40.055	37.699	127.676	113.097	0.299	0.318

## EXTRA STRONG WROUGHT PIPE

Size in Inches	Diameters		Circumference		Transverse Area		Pipe Length	
	External Inches	Approx. Internal Inches	External Inches	Approx. Internal Inches	External Square Inches	Internal Square Inches	External Surface Per Sq. Ft.	Internal Surface
1/8	0.405	0.215	1.272	0.675	0.129	0.036	9.431	17.766
1/4	0.405	0.215	1.272	0.675	0.129	0.036	9.431	17.766
1/4	0.540	0.302	1.696	0.949	0.229	0.072	7.703	12.648
3/8	0.675	0.423	2.121	1.329	0.358	0.141	5.658	9.030
1/2	0.840	0.546	2.639	1.715	0.554	0.234	4.547	6.995
3/4	1.050	0.742	3.299	2.331	0.866	0.433	3.637	5.147
1	1.315	0.957	4.131	3.007	1.358	0.719	2.904	3.991
1 1/4	1.660	1.278	5.215	4.015	2.164	1.283	2.301	2.988
1 1/2	1.900	1.500	5.969	4.712	2.835	1.767	2.010	2.546
2	2.375	1.939	7.461	6.092	4.430	2.953	1.608	1.969
2 1/2	2.875	2.323	9.032	7.298	6.492	4.238	1.254	1.644
3	3.500	2.900	10.996	9.111	9.621	6.605	1.091	1.317
3 1/2	4.000	3.364	12.566	10.568	12.566	8.888	0.954	1.135
4	4.500	3.826	14.137	12.020	15.904	11.497	0.848	0.998
5	5.563	4.813	17.477	15.120	24.306	18.194	0.686	0.793
6	6.265	5.761	20.813	18.099	34.472	26.067	0.576	0.663
8	8.625	7.625	27.096	23.955	58.426	45.663	0.442	0.500
9	9.625	8.625	30.238	27.096	72.760	58.426	0.396	0.442
10	10.750	9.750	33.772	30.631	90.763	74.662	0.355	0.391
11	11.750	10.750	36.914	33.772	108.434	90.763	0.325	0.355
12	12.750	11.750	40.055	36.914	127.676	108.434	0.299	0.325

## FREE CATALOG



## FEATURING REFRIGERATION

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Gaskets, tubing, thermostats, evaporators, coils, and hundreds of other items are listed. No matter what you want in the Refrigeration Field we can supply it when you need it and at a price that will enable you to make a legitimate profit.

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BROOKLYN, N.Y. NEWARK, N.J.  
541 E. FORDHAM RD. 211 CENTRAL AVE.



## Classified

RATES: Fifty words or less, one insertion \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

### POSITIONS AVAILABLE

**SALES ENGINEER WANTED.** Prominent manufacturer of automatic control equipment has several openings for sales engineers. Previous University training or experience in air conditioning and heating, and an acquaintanceship with architects and engineers is essential. Box 774, Electric Refrigeration News.

**REFRIGERATION ENGINEER.** Must be capable of designing hermetic unit and putting it in production. State technical training and practical experience. Box 786, Electric Refrigeration News.

### POSITIONS WANTED

**YOUNG MAN** 26 years old, single, graduate of Coyne Electrical School in electricity, refrigeration and air conditioning, desires position as service man. Willing worker, good character, will locate anywhere. Box 785, Electric Refrigeration News.

### EQUIPMENT FOR SALE

**COMPRESSORS** for 4 and 5 foot cabinets \$7.00 each. Box 769.

**ISOBUTANE.** We offer purest and driest Isobutane for the most exacting scientific purposes; in your 80 lb. cylinders at \$7.75, in our 120 lb. cylinders, \$7.00, in small lots at \$1.00 per pound. The Standard Refrigeration Co. of Pittsburgh, 1148 Dohrman St., McKees Rocks, Pa.

**ATTENTION SERVICE MEN:** A charging valve for G.E. sealed units (Monitor Top, etc.) hand wrench included, for only \$6.25. All orders C.O.D. We pay the postage. Act now! Be ready for that service call. Distributors, Refrigeration Equipment & Supply Co., 5733 W. Chicago Ave., Chicago, Ill.

**REFRIGERATOR DEALERS!** Make money with Federal's reconditioned refrigerators. 1000 refrigerators such as Frigidaire, G. E., Kelvinator, Electrolux, etc., completely remanufactured and rebuilt, some as is, as low as \$15; also hundreds of new refrigerators priced for promotional purposes. Federal Refrigerator Corp., 57 East 25th St., New York.

**BRAND NEW PARTS.** Manufacturers' close outs—fully guaranteed one year. Detroit Lubricator thermostatic expansion valves, \$3.95 (flange type). 50¢ extra for special fittings. Mullins 3 tray all porcelain evaporator complete with porcelain front and hangers, \$6.95. Double row condensers, \$1.39. Electric door light, 59¢. Hundreds of other specials as well as a complete line of standard, nationally advertised parts at drastic price reductions. Write us for your parts requirements. Federal Refrigerator Corp., 57 East 25th St., New York.

### FRANCHISE WANTED

**IMPORTANT FIRM ESTABLISHED** in Spain, dealing exclusively with the distribution of articles on the refrigeration line, wishes to represent in his country American manufacturers and exporters of all kinds of refrigeration parts except condensing units. Exceptionally placed to control the Spanish market with first-class articles. Excellent references. Address: Suministros Frigoríficos, Castanos 25, Bilbao, Spain.

### BUSINESS OPPORTUNITY

**COMMERCIAL REFRIGERATION,** air conditioning, engineering and installation business for sale. Large inventory of parts and equipment. Located in New York City. Owner retiring from business. Box 784, Electric Refrigeration News.

### DISTRIBUTORS WANTED

**MICHIGAN—OHIO—INDIANA** for new automatic defroster for household and commercial refrigerators. A real money-maker. The only 100% automatic defroster on the market. No competition. Fully guaranteed. 20 to 35% savings in electric consumption. Over 100% profit. Unusual opportunity. Address all replies to R. P. Gilcher, 1013 Lafayette Bldg., Detroit, Mich.

### REPAIR SERVICE

**GENERAL ELECTRIC SEALED UNITS—**repaired, rebuilt, exchanged. Guaranteed service. Our modern shop is especially equipped to efficiently repair these units. Prices low and workmanship the best. Give model number when writing. Immediate service. Rex Refrigeration Service, Inc., 446 East 79th St., Chicago.

**GENERAL ELECTRIC sealed units** repaired, rebuilt. Guaranteed workmanship. The largest shop and best equipped in the United States. Give model number when writing. Immediate service. Satisfied customers in every part of the country. Refrigerator Engineering Parts and Service Co., 2800 So. Parkway, Chicago, Ill.

**MAJESTIC UNITS,** any model, standard or hermetic, rebuilt or exchanged \$17.50. Any household model G.E. rebuilt \$22.50. All model Majestics in stock for prompt exchange. All prices F.O.B. Chicago and guaranteed six months. Wholesale only. Will extend above guarantee up to 1 or 1½ years for 50¢ per month extra. Refrigeration Products, Inc., 122 W. Illinois St., Chicago, Ill.

**TIRED OF BEING FOOLED—**we really fix your Majestic Units, make them freeze faster and run less than when they were new, \$17.50 to \$37.50, with a two-year

## R. W. Peters, Former Auto Mechanic, Finds New Interest in Service Work on Refrigerators

341 E. Sandusky St.  
Findlay, Ohio

Publisher:

I received your letter of Jan. 21 and was pleased that you were taking a personal interest in the service man. As I am only a part-time Refrigerator Service Man I was hesitant on attempting to write a letter on any of my experience.

I have been interested in mechanical refrigeration since I was but a boy, but it wasn't until the midst of the depression that I had the opportunity to get started in it. Until this time (October 1931) I was employed by our local Ford dealer as the new car service foreman, but had to take a lay off during the change in models.

At this time the Utilities Engineering Institute ran an ad in our local newspaper for students. I answered this ad and was accepted and started the course, but soon after got a job in the private garage of a large oil company here but finished the course in about two years, but still stayed in the employ of the same company.

I am at present helping on the service and installation of a well known domestic refrigerator and other repair work which I may pick up in my spare time. I will mention some of the peculiar service jobs I have had.

### Gas Leak Exaggerated

One owner sent word that his practically new machine had developed a bad gas leak, so before starting I made a couple of small pieces of wood of the proper thickness and went to his home in a town 40 miles away and found the odor of sulphur dioxide was quite strong, but proved to be just a temporary compressor seal leak. After flushing the seal which required but a minute everything cleared up. Everything has been all right since (this happened about 8 months ago).

Then another time I drove about 25 miles and found nothing but a defective contact at the plug going into the control but on another call not quite so easy, I found the compressor would stall after a short time and was quite noisy.

After purging and pumping down the machine I discovered the compressor was low on oil (they told me this machine had previously had a seal leak but had been repaired) so not being able to locate the missing oil, I added the proper amount and after evacuating put it in operation and to my surprise the noise was gone, but not for long as the noise soon reappeared and would come and go after that.

They used this machine the balance of the summer and that winter I drew out all the refrigerant and removed the compressor and overhauled it and in so doing found the piston pin and bushing scored and loose, but if the rod happened to run over against the boss at one side of the piston it would have very little play, this accounting for the periods of quiet running. After it was overhauled and filled with new refrigerant and adjusted it has run quiet and satisfactory.

### His Tools and Equipment

Now as to tools and equipment—all I have in addition to my regular repair tools were purchased from the Utilities Engineering Sales Co. and consists of refrigerant drum, tube cutter, flaring tool, gauges, tubing, fittings, etc., but I am going to purchase a few more and think the catalogues I received from you will greatly assist me in doing so.

I might mention here that I already had a small air compressor (1½x2½ inches) which I changed over so I can either pump a pressure or a vacuum, which makes it quite handy.

If this gets into print I may be able to come back with another letter sometime if I get more experience along this line. I think I enjoy reading the REFRIGERATION NEWS as much if not more than any other magazine I have ever received, and I know I will enjoy reading letters from service men as well as I do the part on sales, installation, and service.

I wish to thank you for the entry of my name to the mailing lists.

R. W. PETERS,  
U. E. I. No. 2469 Y.

## Questions

### Air-Conditioning Data

No. 2723 (Distributor, Ohio)—"We are interested in air-conditioning data, such as number of installations, horsepower, etc., for the largest cities of the country particularly for the calendar year of 1935. Is this information available now, and if so what is the source?"

"We understand that such information is published in the annual editions of the REFRIGERATION DIRECTORY. Is the 1935 edition out yet?"

"Any information you can give us will be greatly appreciated."

Answer: The 1935 REFRIGERATION AND AIR CONDITIONING MARKET DATA BOOK, which was published last year, contained summaries of the installations made in some 30 major cities in the United States prior to and including the year 1934. This book sells for \$3 per copy.

Listed below are the cities for which air-conditioning data for 1935 has been published in ELECTRIC REFRIGERATION NEWS.

Washington, D. C. .... March 25, 1936  
Miami, Fla. .... March 18, 1936  
St. Louis, Mo. .... March 18, 1936

written guarantee. Send your units to Ft. Smith and get them fixed right. Peno Service Company, Ft. Smith, Ark.

**ALL MAKES** household, commercial thermostats rebuilt, bought, sold. Send me transportation prepaid, five defective or obsolete thermostats. I will repair and return one free of charge for remaining four. Replacement parts bought, sold. Telephone Flushing 9-2206. S. F. Harris, 137-66 Holly Avenue, Flushing, N. Y. Write for price list.

### SCHOOLS

**REFRIGERATION AND AIR CONDITIONING** are two of our best depression-proof industries to men who know their business in these lines. Cut and try methods are passing out. Learn these subjects by combined course in theory and practice. For details write Detroit School of Refrigeration, 6517 Grand River, Detroit, Mich.

### HERKIMER INSTITUTE

1 to 3 months' opportunity to Master theory and practice of all-make service dept. management. **AIR CONDITIONING REFRIGERATION OIL BURNERS** INSTALLATION

In New York City's first service school you meet men from the world over, learning the latest metropolitan service routine. Apply 1819 Broadway, New York City

## The Buyer's Guide

Suppliers Specializing in Service to the Refrigeration and Air Conditioning Industries

### DELIVER YOUR REFRIGERATORS ON RUBBER

### The DAYTON CARRIER TRUCK

Will not mar — Speeds delivery

Type X - 53" long — Type Y - 70" long, both with 8 inch rubber tired wheels. Fitted with movable foot or with permanent wide foot for skirted bottom cabinets.

Type X with one strap and either foot - \$17.00  
Type Y with one strap and either foot - \$18.50  
f. o. b. Dayton

Write for Bulletin

**INTERNATIONAL ENGINEERING INC.**  
Dayton, Ohio 15 Park Row, N. Y.



### TYPE KR-12 Models

## RANCOSTAT

The Stainless Steel Thermostat

Why do we make the Rancostat of Stainless Steel? The obvious reason is greater strength and no breakage. There are many advantages. For example, the strength of this case permits the use of a large diameter bellows which provides more power for operation of the switch. Write for KR Bulletin.

The Automatic Reclosing Circuit Breaker Co.  
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TUBE CUTTER  
WITH STEEL ROLLERS  
IN TUBE SUPPORT



### FOR HARD DRAWN COPPER PIPE

A tube cutter that's in a class by itself! Friction is reduced by the steel rollers. Very sturdy. Easy hand grip assures continuous feed of cutter wheel. Replaceable reamer and cutter wheel.

No. 10 for 3/16" to 3/4" o.d. inc....\$2.20  
No. 20 for 1/2" to 1 1/8" o.d. inc.... 2.75  
No. 30 for 1" to 2 1/8" o.d. inc.... 3.75

**HENRY VALVE CO.**  
1001-19 N. Spaulding Ave., Chicago, Ill.

IF YOUR JOBBER CAN'T SUPPLY YOU, ORDER DIRECT

### 1935 Sales Figures

No. 2725 (Manufacturer, Michigan) —"As subscribers to ELECTRIC REFRIGERATION NEWS, we would like to inquire if you have available in your statistical files, information on the number of household refrigerators of each make sold during the year 1935."

"Total sales of household refrigerators for 1935 amounted to 1,446,790 units we understand, and if possible we are anxious to learn how this is divided among the various makes of refrigerators."

Answer: We regret that we cannot furnish you with figures on the number of household refrigerators of each make sold during the year 1935, as the manufacturers never make these figures public.

You have probably noticed that the total sales of all manufacturers by months are reported in ELECTRIC REFRIGERATION NEWS throughout the year, and also the total number of refrigerators sold in each state by months. The March 25 issue of the NEWS contained a tabulation of the number of refrigerators sold in each state for the year of 1935.

### Refrigeration Jobbers

No. 2726 (Dealer, New York) —"Having been, for years, a reader of trade journals serving various industries I wish to state in all sincerity that yours seems to be the most alive and most progressive."

"For some time we have been considering the possibilities of the refrigerator replacement parts distributing and jobbing business. Your Oct. 30, 1935 issue, received this morning, is quite informative. Can you give us any further information? For example, who are the refrigeration supply jobbers in this and neighboring states; do jobbers, distributors, and dealers of refrigerators stock the replacement parts, partially or completely; is it the policy of the refrigerator manufacturer to oblige his distributors, jobbers, and dealers to stock replacement parts or is it optional; do parts manufacturers extend closed territories?"

Answer: In answer to your first question, we regret that at the present time we cannot supply you with a complete list of jobbers; however, a list of many of the leading jobbers was included in the Oct. 30 issue of ELECTRIC REFRIGERATION NEWS.

In answer to your second question, distributors and dealers for the various makes of electric refrigerators may or may not stock replacement parts for the line which they handle; a survey would probably show that in the vast majority of cases distributors do, and that most dealers do.

Whether or not the manufacturer

of household electric refrigerators obliges his distributors and dealers to stock replacement parts varies as to the policy of the manufacturer.

In answer to your final question: 'Do parts manufacturers extend closed territories,' the answer is again that some do and some don't, and you'll have to find out by querying individual manufacturers on their policy.

### Centrifugal Dryers

No. 2728 (Manufacturer, Michigan) —"One of our distributors abroad has written us asking for a quotation on Centrifugal Dryers. Our distributor has in mind the kind of dryer as used on the Easy washing machine, but he wants a separate unit entirely."

Answer: See list below.  
Wenzelman Manufacturing Co.  
Galesburg, Ill.

Haring & Stephens  
633 McBride Ave., Paterson, N. J.

King & Gerber Co.  
438 Graham Ave., Paterson, N. J.

Sharples Specialty Co.  
2362 Westmoreland St., Philadelphia, Pa.



### "NO WONDER HE'S GOOD He Trained with U.E.I."

U. E. I. students STAND OUT when they enter the Electric Refrigeration and Air-Conditioning Industry.

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U. E. I. students are SELECTED. Not every man who wants to enroll with us can do so. We pick men for their general qualifications and then give them complete training in every phase of Electrical Refrigeration and Air Conditioning work on all types of equipment. That is why the services of U. E. I. trained men are so satisfactory to employers.

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